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MOTOR AGE

FOR AUTOMOTIVE SERVICEMEN

JULY 1942

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for Service

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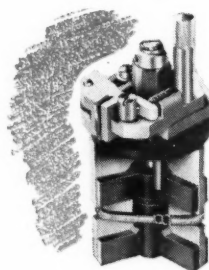


Tool up free WHILE YOU CAN!

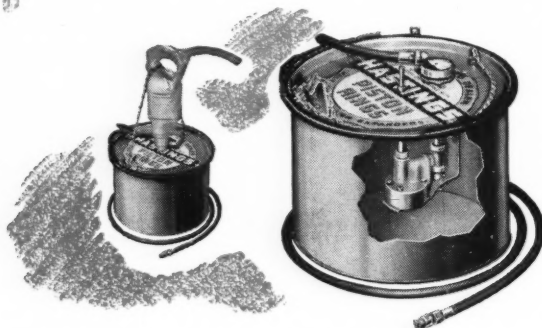
Good rings are needed on the job—but good tools are needed, too. Hastings offers these and other special tools to help you do better, more accurate service work.



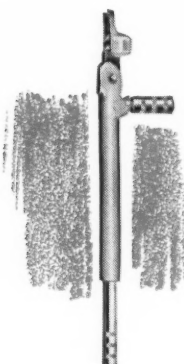
NEW HASTINGS AIR-PEEN HAMMER—Compact, light, fast and easy to use. The most accurate peening device known as it permits each piston to be peened right in its own cylinder. Operates from air compressor. Exclusive with Hastings.



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STEEL-VENT PISTON RINGS

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Facts and Flashes

From the
Technical Service Department
ETHYL CORPORATION

FROM THE WARTIME AUTOMOTIVE FRONT

1600 West Eight Mile Road

DETROIT, Michigan

Octane ratings of gasolines for civilian use continue to hold up fairly well. Still no need to penalize performance and economy by the use of extra cylinder head gaskets or low compression cylinder heads to overcome knocking.

Hot weather may aggravate knocking complaints—so in some cases it may be necessary to retard ignition timing slightly for summer driving. Be careful not to over-retard, as this will lose power, cause overheating and waste gasoline.

Mechanics can help war effort by conserving parts. For instance, if one spark-plug is bad, only that one should be replaced. Same goes for valves and other parts. Consider also repair instead of replacement of many parts—thus conserving strategic materials.

American military gasoline is reported far superior in antiknock and other qualities to Axis fuels. U. S. petroleum industry fortunately developed new processes and enlarged facilities in peacetime. Basic reason for lower octane civilian gasolines is diversion of high octane components and antiknock fluids to military use.

U. S. is independent of foreign sources for making antiknock fluids. Materials used are all commonplace domestic raw materials—salt, molasses, lead, sulphur, petroleum and sea water. This, plus recently enlarged Ethyl manufacturing facilities, assures ample supply of anti-knock fluid for military gasolines used by Army, Navy and Allies.

"Oil is ammunition—use it wisely!"



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We're telling *your* customers—with every penny of our national advertising money—that Registered AC Cleaning Stations can help save gas, conserve plugs, and keep engines efficient through plug cleaning. Month after month, our advertising continues to give you this full, direct support.

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MOTOR AGE

With Which is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

Vol. LXI, No. 8

July, 1942

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MOTOR AGE

SHOP TALK

By

Bill Toboldt

Get in the Scrap

Just how much scrap rubber will be gathered by automotive filling and service stations cannot be told at this time. But the importance of gathering every last ounce cannot be over-emphasized, and every repair man should do his utmost in helping to gather as much scrap rubber as possible. Don't let a customer leave your station without asking him to bring in all the old rubber goods that he possibly can. The armed forces just can't get along without it. It is needed to win the war. Everyone has something to contribute. Ask every customer and, when it comes to the farmers, ask them to go through their fields and retrieve the old tires which they are using to stop up the gullies and eroding soil. And don't forget your own scrap pile. Of equal importance is scrap metal, particularly the non-ferrous metals. Brass and copper are particularly scarce and of extreme importance in building our war machine.

Tire Optimism

However, an occasional optimistic note is now being heard in regards to the tire situation. This optimism is based on the use of Thickol for re-

treading, the use of scrap rubber and the statement by Standard Oil that by the end of 1942 their synthetic plants would be producing at a rate in excess of 500,000 tons per year. Some one or combination of those factors would provide some tires, it was argued. Even the most pessimistic agreed that the recent government edict making war workers eligible for third, fourth and fifth line new tires, will keep many million cars on the road and therefore, keep many repair shops busy.

Gas Lines

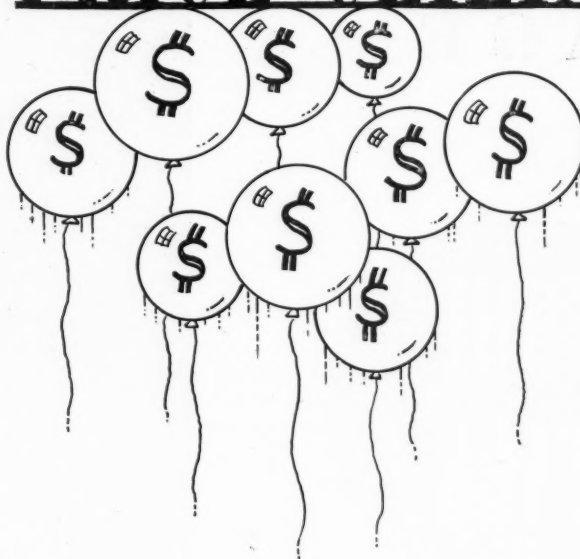
In traveling through the central west, the first question I am asked is "how is the gas rationing working out in the east." In the beginning, it wasn't so bad, because you

could always get gas up to the limits of your particular ration card but, toward the latter part of June, filling stations did not have sufficient fuel to take care of their customers. Each filling station is allotted a certain number of gallons (based on former sales) and the procedure at many stations was to sell a portion of their quota each day and then close up. The result was that long queues of cars would line up at the filling stations waiting their turn. Other operators kept pumping gas until they were sold out and then remained closed until they received their next allotment of gas. Caustic remarks and epithets were common. The most frequently heard dealt with the millions that had been spent raking leaves instead of building pipe lines and rubber stock piles.



J U L Y • 1 9 4 2

NEW PRICE CEILINGS



REGULATION of prices in the automotive-service field was placed on an entirely different footing July 1, with the issuance by the Office of Price Administration of Maximum Price Regulation No. 165—Consumer Service. The general effect of the new order on prices will not differ greatly from the objectives of the original price-regulating order that had been in force since May 18, but the new regulation deals exclusively with service and with the problems peculiar to that field.

As with the original regulations, the ceiling price on every service sold in every shop will be the price at which that service was sold or offered for sale in that shop during March of this year, but the new order specifically excludes repairs to commercial vehicles. Truck service ceilings still are to be controlled by the original price regulation, and, in setting up ceilings on truck repair and service, shops must use the methods prescribed in the original order. (See June MOTOR AGE, Page 64.)

In the new regulations, service as it applies to automobiles is understood to mean both the storage of passenger cars and the labor and material necessary to service or repair them.

The new order makes the determination of ceilings and the handling of details somewhat easier for the serviceman. The highest price that can be charged for any service is the highest that was charged for the service in the same shop during March, 1942. If a particular operation was not actually performed during March, then the highest price that may now be charged is the price at which the shop offered to perform it in that month or would have offered to perform it.

For most automobile service shops—those customarily using printed schedules of job prices—establishing the fact that a particular service was offered during March will be a simple matter. Shops that use the Chilton Flat

Rate and Service Manual, for example, may simply point to the fact that the book was used during March, and, therefore, every operation listed was in effect offered for sale.

This does not mean that every shop will have the same ceiling price for every service. For example, a shop that based its March price for a carbon-and-valve job on a Series 40A 1941 Buick on a \$2 labor rate would, according to the Chilton Flat Rate Manual, have received \$14.35 for the work, and that would be the ceiling price. On the other hand, a shop that based its charges on a \$1.50 labor rate would have received only \$12.50. In these instances, the ceiling price that could be set by the first shop would be \$1.85 higher than the ceiling permitted the second shop. The shop orders will show the shop, as well as the OPA, what labor rate was charged in March.

In case any class of customers was given a discount during March,

the shop must continue to allow the same discount to the same class of customers. However, there is nothing to prevent a shop from allowing a larger discount.

It is worth noting, too, that the variation in ceiling prices among shops applies also to different shops operated by the same owner. If the owner charged lower prices in one shop for the same type of service in March than he charged in another shop, the maximum prices permitted under the ceiling will differ between the two shops.

There are a few operations for which it has been impossible to set flat-rate prices and which therefore are not included in the Chilton Flat Rate and Service Manual. An example is fender straightening. In such a case, the OPA indicates, the serviceman may charge for labor at the same rate as he charged on other jobs in March, and may include material at the highest March prices. To bump a dent out of a fender might take two hours and

Regulations effective July 1 make it easier for the automobile shop to set ceilings and keep records

FOR SERVICE



a little paint. The shop, if its labor rate was \$2 an hour in March, may charge \$4, plus a charge for the paint used.

In some cases, particularly shops located in or near resorts, prices have fluctuated according to the season, rising in busy seasons and declining in slack months. The new regulations recognize this fact and provide a method for setting ceilings. This is done with the aid of a "cost-of-living" schedule.

A shop in a seashore town, to cite an instance given by OPA, might charge \$1.50 for a lubrication job in summer but only 75 cents in winter. The winter price would still be in effect in March and would therefore seem to limit the ceiling to 75 cents, yet the special ruling permits a higher price.

In arriving at this ceiling, the shop would take the price charged during the corresponding month last year and add a certain percentage established by OPA as a cost-of-living increase. The price of a

lube job last August in the seashore shop was \$1.50. The percentage of increase for the period, as shown in the table below, is 7.6 per cent. This, multiplied by \$1.50, gives a total of \$1.61, the ceiling price for a lube job done by the shop next month. The percentages that may be added to the prices charged during various periods in the year ended Feb. 28 this year follow:

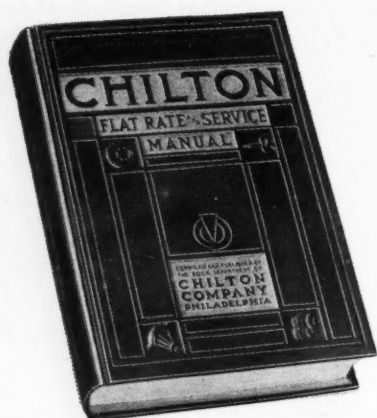
| Percent- age | Period |
|-----------------|-------------------------------------|
| 12.9 | March 1 to Apr. 14, 1941, incl. |
| 11.8 | Apr. 15 to May 14, 1941, incl. |
| 11.1 | May 15 to June 14, 1941, incl. |
| 9.3 | June 15 to July 14, 1941, incl. |
| 8.5 | July 15 to Aug. 14, 1941, incl. |
| 7.6 | Aug. 15 to Sept. 14, 1941, incl. |
| 5.7 | Sept. 15 to Oct. 14, 1941, incl. |

| | |
|-----|---|
| 4.6 | Oct. 15 to Nov. 14, 1941, incl. |
| 3.7 | Nov. 15 to Dec. 14, 1941, incl. |
| 3.4 | Dec. 15, 1941, to Jan. 14, 1942, incl. |
| 2.1 | Jan. 15, 1942, to Feb. 14, 1942, incl. |
| 1.2 | Feb. 15, 1942, to Feb. 28, 1942, incl. |

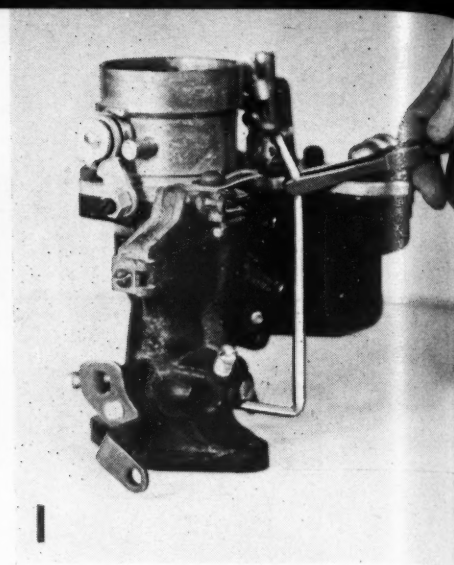
Adjustment of prices on a seasonal basis can be made only once, and the ceilings set are to remain as long as the price regulations are in effect.

Any shop that considers the ceiling prices are abnormally low or that increases in costs between Feb. 1 and April 27 this year were not reflected in its March prices may apply for adjustment to any regional office of the OPA.

Records must be kept in greater detail under the new regulations than was necessary under the old, although the paper work for the
(Continued on Page 70)



The mechanical procedure in this and other articles in Motor Age supplements the Service Section of the Chilton Flat Rate and Service Manual, the book used by 26,000 maintenance shops.

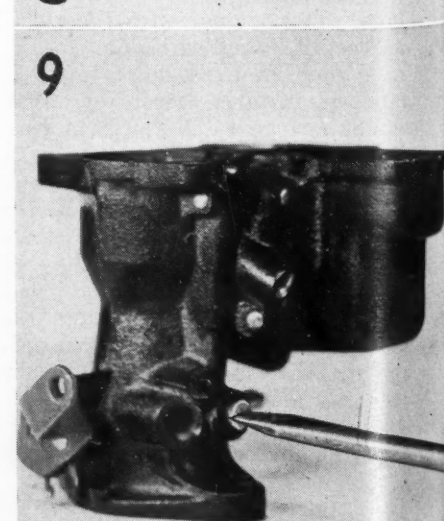


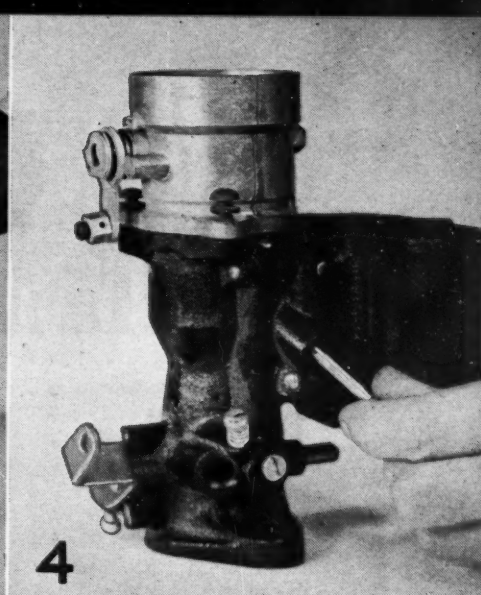
SERVICING THE

W1 TYPE

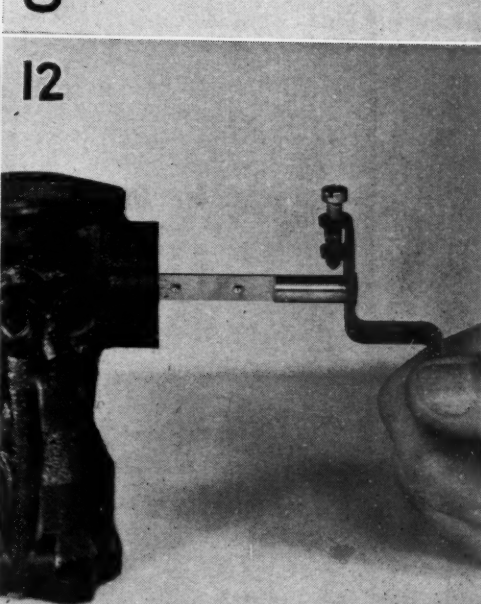
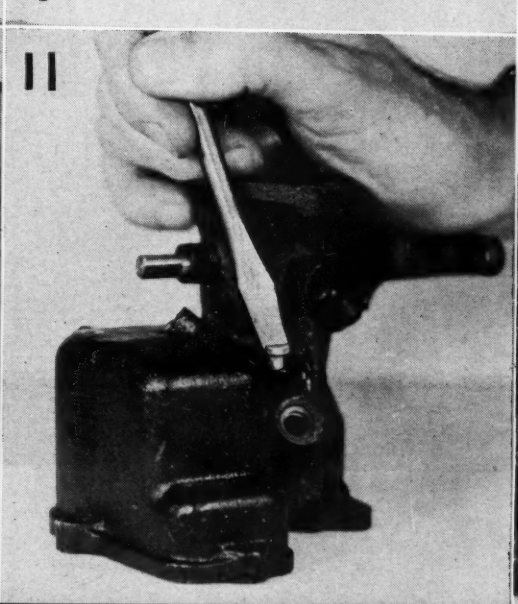
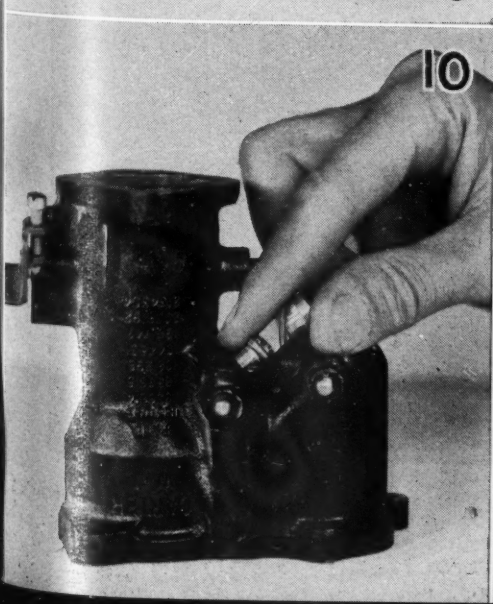
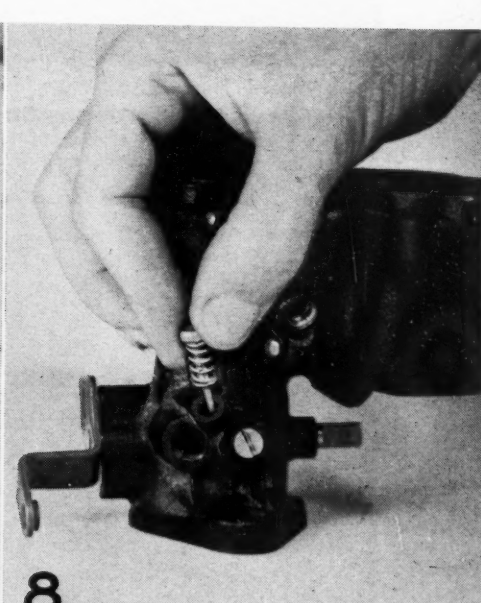
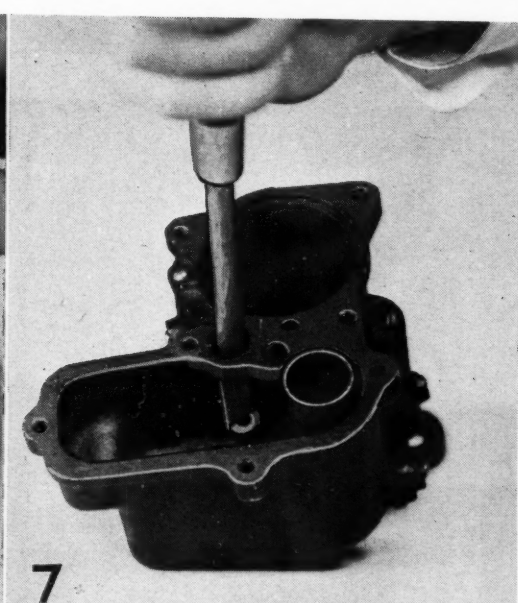
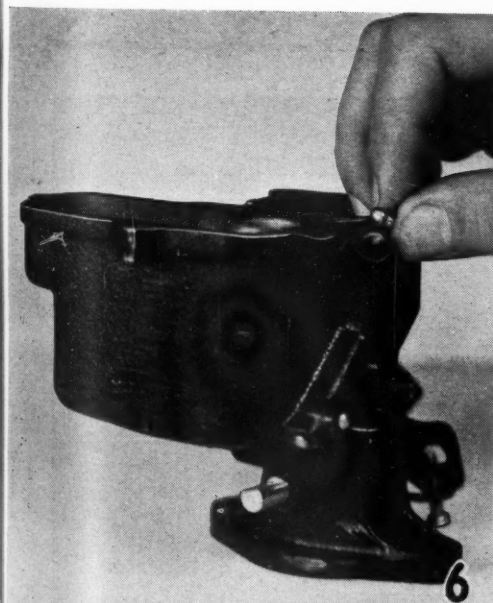
After complete disassembly, check each part carefully and replace any found to be worn excessively

1. After disconnecting throttle connector rod at pump arm, remove throttle connector rod and make sure ends are not worn.
2. Loosen set screw and remove throttle shaft arm, making sure that hole in throttle shaft arm is not worn.
3. After removing machine screws, lift carburetor float bowl cover.
4. Nozzles are removed after removing nozzle passage plug.
5. Air horn assembly is secured to carburetor body by four machine screws. Remove screws and then the air horn.
6. Pump jet is removed with screwdriver after removing pump jet plug.
7. With a screwdriver, remove metering rod jet.
8. Using a screwdriver, remove idle adjustment screw, checking seating surface for ridges.
9. Remove idle port plug.
10. After removing check valve passage plug, remove strainer, intake and discharge check valves.
11. Remove low-speed jet.
12. Remove throttle valve from shaft and then withdraw the throttle shaft. Check shaft for wear.



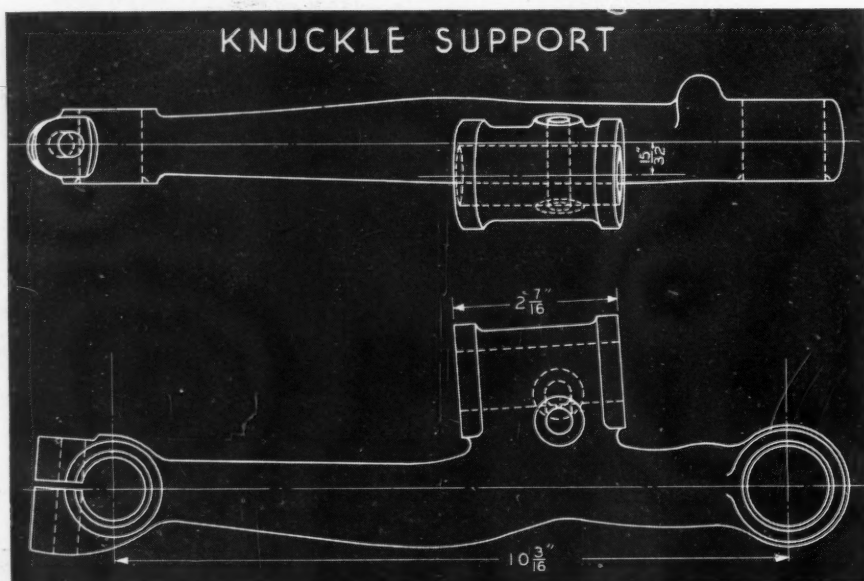


CARTER CARBURETOR

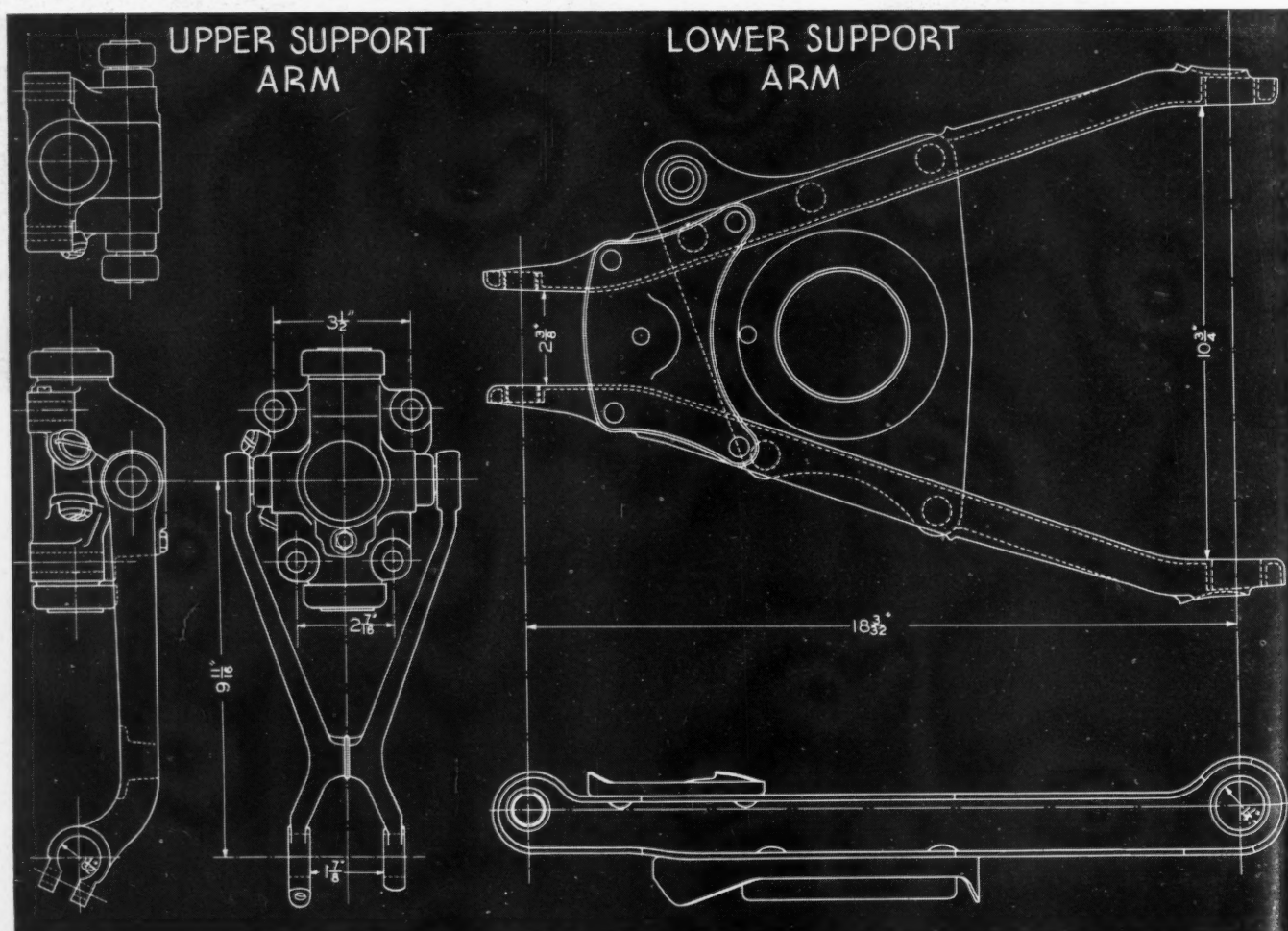


KNEE ACTION ARM

DATA



Here are the measurements you need to check the knee-action arms and knuckle-support arms on all models of 1942 Cadillacs





SAVE THE TRUCKS

**Owners and drivers asked by ODT
to pledge proper maintenance of
vehicles and thus keep 'em rolling**

WITH 3,000,000 booklets now being distributed to the nation's truck owners and drivers, the Office of Defense Transportation has launched a truck-conservation program that will affect every motor truck and driver and every truck-repair shop in the country. The program is entirely voluntary, but owners and drivers are urged in a letter from President Roosevelt, reproduced in the

booklets, to pledge themselves to maintain and operate their truck in a manner that will insure the longest possible life.

Detachable pledge forms, bound into the booklets, are to be prominently displayed after being signed, and each vehicle operated by an owner that signs a pledge is to carry a red, white and blue decal-comania on the right-hand cab door. These official insignia for co-

operating vehicles are to be supplied by truck and parts manufacturers to repair shops, which in turn will distribute them to co-operating truck owners.

Essentially, the truck-conservation plan is one of preventive maintenance. Owners are asked to make thorough mechanical inspections at 1000, 5000 and 15,000-mile intervals, to require drivers to turn in daily reports on the condition of their vehicles, and to see that broken or worn-out parts are disposed of immediately to a scrap dealer if they cannot be salvaged. Further, owners are urged to avoid overloading their trucks and to permit only thoroughly instructed, competent drivers to operate them.

The drivers' part in the program is five-fold. They are asked to pledge themselves to avoid accidents, to start and stop smoothly, to report the condition of their trucks daily, to avoid delay, and to check tires daily for damage or unusual wear. The daily report is fairly comprehensive, consisting of 22 separate checks. These, of course, are not comparable to a shop check, but they do cover all the faults likely to come to the notice of a driver while driving the truck.

From the standpoint of the service shop, the periodic inspections are more important. They are extremely thorough and entail a considerable amount of work. They are not to be confused with the safety inspections required in nearly half the states. The 1000-mile truck-conservation inspection, for example, includes 26 checks and services, ranging all the way from chassis lubrication to adjusting the carburetor and clutch.

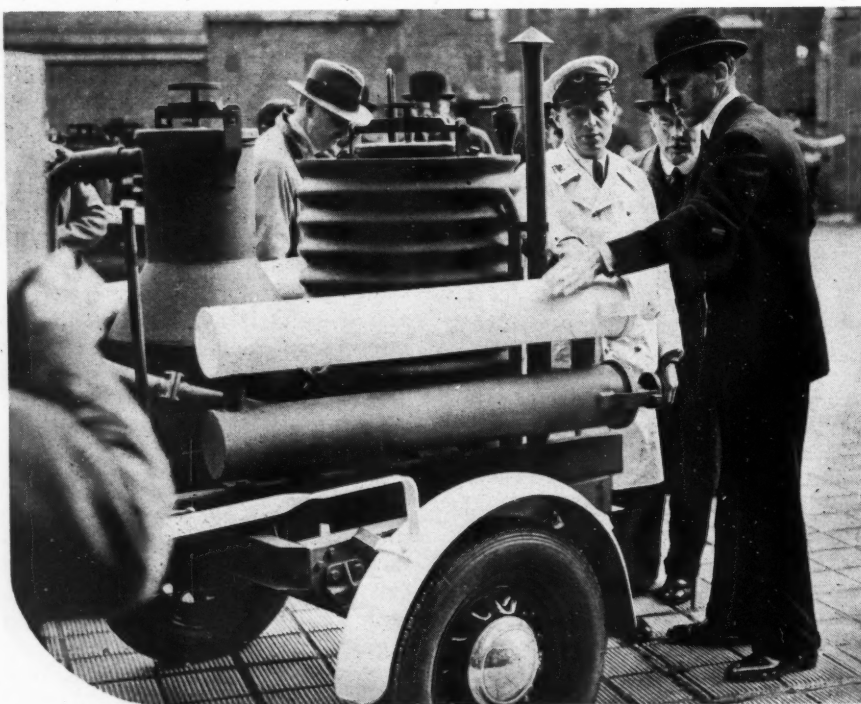
At 5000 miles, all the checks and services are repeated, some with greater thoroughness, and an inspection of springs, spring clips and U bolts is added. The 15,000-mile inspection includes wheel aligning, a check of brake drums and lining, and retreading of smooth tires. There are 31 operations in all, leaving nothing whatever to chance.

Throughout the booklet emphasis is placed upon regular inspection, proper service and careful driving. Ten interesting and costly examples of damage resulting from neglect are pictured, and some impressive facts about the waste of

(Continued on Page 70)



First of a series of articles on substitute fuels we could use to keep 'em rolling in an emergency



WHAT

WITH the advent of gasoline rationing in this country, thoughts are being directed to the use of possible substitutes. In England and Continental Europe producer-gas units are in common use and it is natural for operators in this country to wonder whether we might be forced to adopt the same method.

It must be kept in mind, however, that the problems in this country are quite different from those in other countries. Here we have an ample supply of gasoline; our only problem is one of distribution. In foreign countries the problem is just the reverse; practically all the gasoline required has to be imported (except for the synthetic gasoline being manufactured in small quantity), and the importation of any product is risky business these days. Therefore, they have been forced to develop other fuels.

Producer gas outfits are rightly named; they are outfits for producing gas (carbon monoxide) by burning some kind of fuel, and naturally the fuel used is that which is most common to the particular territory in which the car or truck is being operated. The accepted fuels are wood, coal and charcoal. This carbon monoxide gas is passed into the engine by way of the intake manifold and burned just as the mixture of gasoline and air is burned.

The idea of operating an automobile on producer gas is not new. In 1907, a firm in Scotland reported the application of a portable producer-gas outfit to an automobile engine of the type we know today as the four-cycle internal combustion engine, with satisfactory results. This apparently was considered more as an experiment than as having any practical value, as gasoline had become the accepted fuel for automobile engines. Interest in producer gas was revived during

Lord Geoffrey Lloyd, British Secretary for Mines, inspects a producer-gas unit which can be mounted on a car or truck or on a trailer chassis. It burns anthracite coal.

WILL WE USE FOR GAS?



A London bus, trailing one of the producer-gas units, demonstrates the ability of the substitute fuel to propel heavy-duty vehicles.

World War I, particularly in France, but again it fell off after the war. With the outbreak of the present conflict, interest was once more aroused, and many different types of producer gas outfits are in use today, particularly in England.

In general, the outfit consists of a vertical cylinder or furnace which can be mounted either on the vehicle or on a small trailer drawn by the vehicle. The fire in the cylinder produces the gas, which is passed through cooling tubes and then through filters to remove the heavy particles which are carried in suspension, and then the gas is admitted to the engine.

When an engine designed to op-

By BOB HANKINSON

erate on gasoline is made to operate on producer gas, it develops only about 60 per cent of its normal efficiency. The heat value of a cubic foot of carbon monoxide gas is about 62 B.t.u. compared with approximately 95 B.t.u. for the proper mixture of the same volume of gasoline and air. The engine will operate fairly well on a level road, but it just hasn't got what it takes for hill climbing. As one writer in England expressed it, a vehicle is "one gear worse" when operated on producer gas than when operating on gasoline.

The main advantage in using producer gas is the low cost of fuel. Since coal, charcoal or wood is available in practically unlimited quantities in every locality, and is cheap in price, it enables the vehicle to be operated at about 20 per cent of the cost of gasoline. Too, it permits operation of the vehicle, which would not be possible otherwise if the supply of gasoline had been cut off due to war conditions such as the present. In an emergency, cars and trucks can be kept on the road by using producer gas.

There are many disadvantages which, to one accustomed to the ease with which the ordinary auto-

(Continued on Page 52)



WHAT'S WRONG HERE?

Here's an almost perfect example of how to make an easy job hard. Using a pipe wrench here is about as sensible as hunting butterflies with an elephant gun.

A pipe wrench was made for turning pipe. Use it on a nut and you run into two difficulties. First, you mutilate the nut so badly that it can never

be turned with any other kind of wrench. Second, the jaws of a pipe wrench are so made that they tighten as they turn, so when you use them on a nut you compress it and make it that much harder to get off.

There's a tool made for every job. Why not use it?



The country's rural areas require 10,000,000 cars to carry on their normal activities.

WE MUST HAVE CARS

**Brookings Institution study shows
we need at least 20,000,000 cars
to maintain our transport system**

WE must maintain at the very least 20,000,000 passenger cars if we are to avoid serious disruptions of our economic life.

This is the conclusion reached by the Brookings Institution, Washington, D. C., after a study of war-time transportation problems, the results of which are published in a pamphlet "Automobile Transportation in the War Effort," by Charles L. Dearing.

One of the most significant of the findings is the fact that 93.6

per cent of all the automobiles in the country are used for business or necessity driving at least part of the time. Such use is defined by the Public Roads Administration as including movement to and from work, from farm to market, shopping, and the travel of salesmen.

A table compiled from data furnished by State-wide Highway Planning Surveys, of the Public Roads Administration, shows the difficulty of separating one class of cars from another and saying, "These cars are used for business,

those for pleasure." Here is the table:

| Percentage of Travel for Business | Percentage of Passen- ger Cars |
|---|--------------------------------------|
| 0.0 | 6.4 |
| 0.1- 10.0 | 4.7 |
| 10.1- 20.0 | 7.2 |
| 20.1- 30.0 | 8.2 |
| 30.1- 40.0 | 9.1 |
| 40.1- 50.0 | 9.8 |
| 50.1- 60.0 | 10.3 |
| 60.1- 70.0 | 10.4 |
| 70.1- 80.0 | 10.3 |
| 80.1- 90.0 | 9.7 |
| 90.1-100.0 | 13.9 |
| | 100.0 |

These figures are extremely interesting in view of the pre-rationing guesses by the Office of Price Administration that a third of all passenger-car owners would seek A cards, the type issued for pleasure driving only. According to the above table, only 6.4 per cent of the cars on the road are driven solely for pleasure. Further, 54.6 per cent of all owners do more than half their automobile traveling on business.

It is further shown by the study that dependence on motor transportation varies greatly among different areas. The rural population, for example, is preponderantly dependent on automobiles. These 57,000,000 persons need 10,000,000 passenger cars to carry on their normal activities of marketing produce, buying supplies, and so on.

Another 13,000,000 persons, the study estimates, require 3,000,000 automobiles for local travel, even though they live in urban communities. Overflowing of urban population to suburbs has proceeded without regard to existing mass-transportation facilities, with the result that suburbanites would be without any means of transportation if deprived of their cars. In addition, 2320 towns and cities in the country do not have trolley and bus lines.

Thus, 14,000,000 passenger cars are used by 70,000,000 persons that cannot find substitutes. The study shows that the horses, mules, and wagons that would be necessary to carry the load do not exist and cannot quickly be provided. Moreover, the railroads cannot possibly assume the burden for the simple

(Continued on Page 59)

SOME DIRT ON BEARINGS

**Pop O'Neill's young helper learns
how bearing life can be increased
with proper cleaning and handling**

By J. EDWARD FORD

"I WANTED you to know," the precise female voice on the 'phone was saying, "that you did a perfectly splendid bit of work on my car. It runs like new."

Pop O'Neill wasn't a sucker for flattery, but he did get a kick out of having a customer calling up to compliment him on a job, particularly when the customer was as critical as Miss Hayes, the Glenrock High English teacher. He smiled.

"I wouldn't think of taking my car anywhere else," said Miss Hayes.

"That's fine," said Pop, "I appreciate it."

Most of her calls were for air or water, still Pop was feeling pleased with everything in general as he laid the 'phone on its cradle and returned to the shop. He was humming an off-key tune as he reached the bench where Chuck Masters, the kid he was breaking in, had just been working. He stopped walking and he stopped humming.

On the bench, lay the cone and roller assembly of a front-wheel bearing and a clutch-throwout ball bearing. They had been cleaned carefully but had been dropped in a litter of grimy wrenches and a greasy wiping cloth.

"Come out from under there," Pop yelled, and Chuck's creeper slid from under a car. "What are these bearings layin' here for?" asked Pop.

"That front-wheel bearing," said Chuck, "is the one we ordered a new cup for. The clutch-throwout bearing is out of that Buick job."

"We had a talk about bearings the other day, but it looks like we didn't cover all the ground. You can't leave bearings layin' around like that."

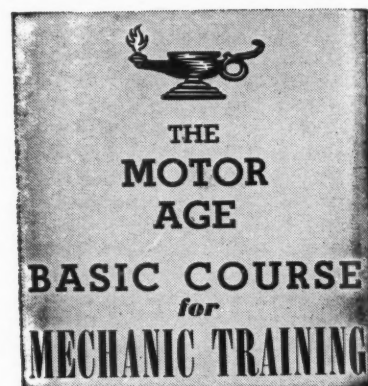
"I cleaned 'em good," said Chuck.

"And then dropped them in all that muck. Didn't anybody ever tell you that dirt ruins bearings?"

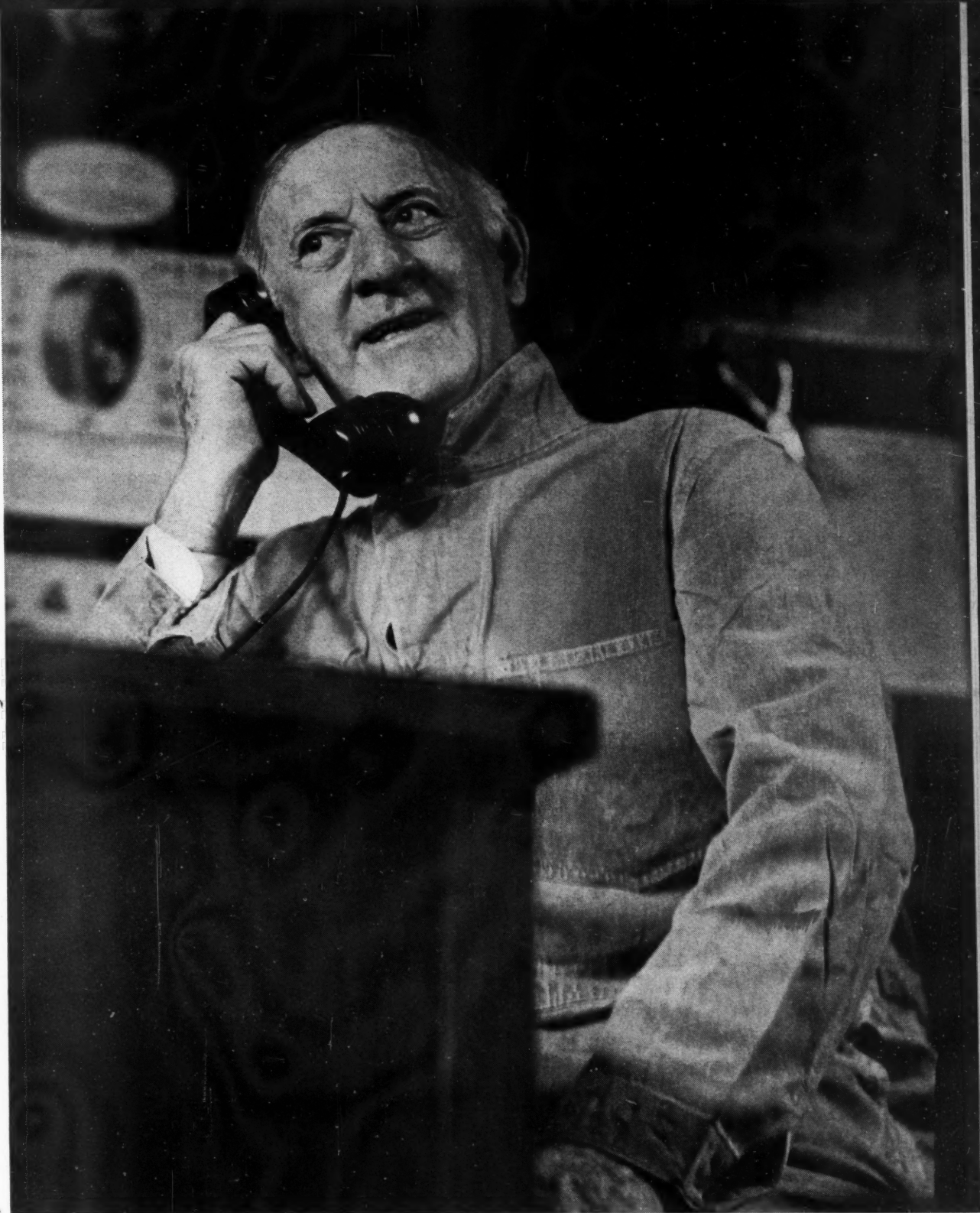
"Yes," said Chuck.

"Then let's keep 'em clean," said Pop. "Never lay a bearing down on a bench unless you lay a piece of newspaper down first. And always cover it up till you're ready to use it again. If you don't you're givin' dirt and filin's a chance to work into the roller or the balls, and that's signin' the death warrant of that bearin'." He picked up the ball bearing, and ran a forefinger over the separators. "Dry as an Australian Sunday," he said. "Why didn't you put some engine oil on this after you cleaned it?"

"Why I — a —" stammered Chuck.



"It looks like you and me are goin' to have a little talk, kid. I thought we covered a lot of important points about bearin's last month but now I see I overlooked some. You can't be too careful with bearings. They've got one of the toughest jobs in an automobile. They're made with absolute ac-



Pop wasn't a sucker for flattery but he did get a kick out of having a customer compliment him on a job. He smiled.

curacy to do their particular job, and any kind of dirt or other foreign matter keeps 'em from doin' it.

"So we've got to be extra careful, especially after we dismount them off a shaft. With ball bearings, the inner race is such a tight fit on the shaft that it contracts

when we take it off and leaves space between the balls and the races to let in dirt."

"I always clean 'em right away," said Chuck. "And I don't spin 'em with the air hose any more."

"Well, that's somethin'. An air hose is bad medicine for a lot of reasons. If the dirt is hard to get

off, you can heat light oil, say SAE 10, to 170 deg., and soak the bearing in it. That usually does the trick. If it don't, carbon tetrachloride will. When you try spinnin' the bearing before you wash it, you're runnin' the risk of scorin' or gougin' the races and

(Continued on Page 65)

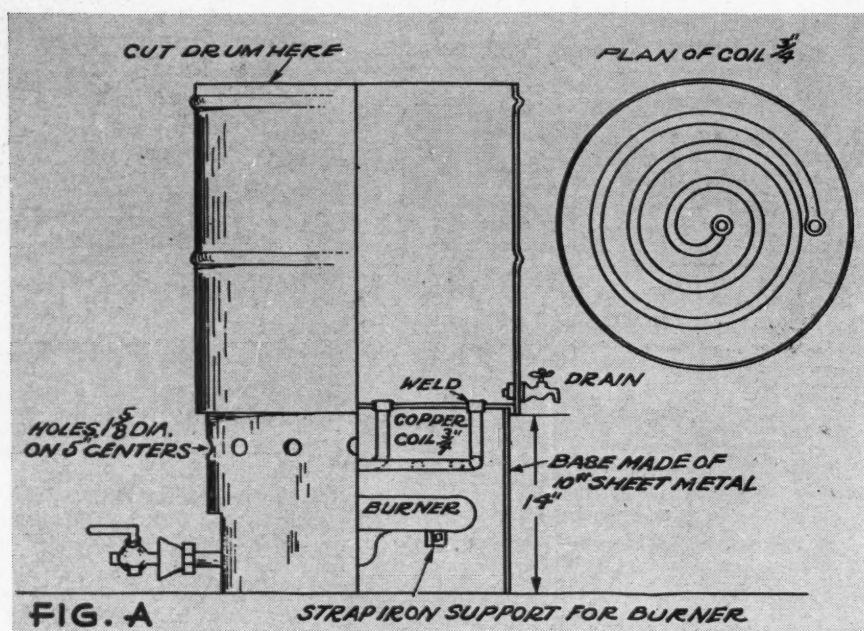


Diagram showing how the tank is constructed. A copper coil is added to speed up boiling.

CLEAN PARTS

MEAN FASTER WORK

This tank, made from an oil drum and gas ring, simplifies cleaning

By MICHAEL J. TURNER

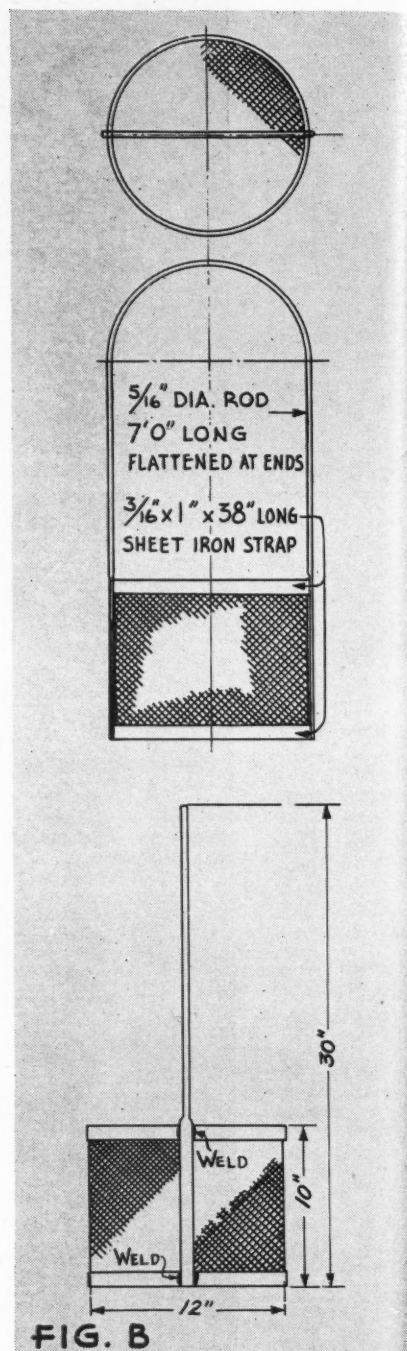
Oakite Products, Inc.

MANY service station and repair shop owners are finding it difficult to replace mechanics called to the armed forces. Necessity, in many instances, has forced them to assume the responsibility of training their own "trouble-shooters" and repair men. If this is true in your shop, there are many ways owners have found to help make this training period shorter and easier. One is to make

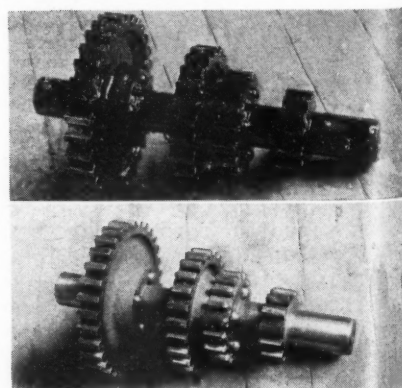
sure that the parts your trainee must handle, overhaul and repair are free from every trace of oil, grease, muck, grime, and other foreign matter.

There are definite reasons why this is important. In your own experience, you have probably had repair jobs that possibly backfired simply because a crack, a worn spot or a score in a part was overlooked.

(Continued on Page 49)



Parts basket to be used with boiler. Mesh size depends on type of parts to be cleaned.



Part before and after cleaning in tank. Inspection is easier when the part is clean.

WOMEN AS SERVICE CUSTOMERS

AFTER THE WAR

WHENEVER a conversation today turns to the topic of the millions of young men being trained in aviation, some one is sure to say, "And after this war you're going to see a big swing to airplanes. These fellows who are learning to fly aren't going to be content to stay on the ground. They'll be wanting little ships of their own."

Very true—no doubt! Any change as radical as our present war effort is bound to leave many marks on the world. We began to think of the various other groups being trained today in new fields. Our own interest in women and women's activities led us to see how this war is working a great change in their future—particularly as motorists.

The Red Cross, the Emergency Aid councils of many states, the Navy League, the Civilian Defense organizations, and the countless women's volunteer groups have in most cases organized motor corps and ambulance units, whose women drivers are trained not only in actual driving technique, but in the fundamental maintenance of the engine as well.

The actual number of women doing such work is, at the present writing, unobtainable. Many organizations—especially the rapidly expanding agencies for civilian defense—have no up-to-date records, yet such figures as are available lead one to place the figure well above the million mark, even with the utmost conservatism.

Many of these women have been taught how to overhaul a motor completely. Almost all are instructed in the less intricate operations of tire-changing and the like. Now any woman, once taught the principles of motor care (which cannot help but give one an understanding and appreciation of its value), must of necessity become a better service customer. It is true in any field—not only the automotive. Look at the camera enthusiast, for instance. His lenses, shutters, lights, film and other



Mechanical knowledge they gain in war work will make them customers for better service in peace time

By ROSE LU GOLDMAN

equipment will be cared for much more meticulously than the box camera of the average amateur. The really good cook will have a neat and orderly kitchen, with a place for everything and everything in its place—shelves well-stocked, yes, even knives sharpened. You know in your own business that the man who really loves his work and his tools and who knows how to handle them will keep them in good order.

It is bound to be the same with the women who are learning to be real drivers during this present war effort. Oh, they've known how to "operate" a car for years; they've put a lot of miles behind them what with running errands, driving the youngsters to school, taxiing their husbands to the station, and so forth. But they learned to drive in a hand-me-down fashion, taught by an irritable husband,

(Continued on Page 64)



TIRE SERVICE

Make sure that your new men follow these easy steps to save time when dismounting drop-center rim tires

Courtesy the Rubber Manufacturers Association

TO remove a tire from a wheel the latter is mounted on the axle or on a spare-tire carrier; rub soft soap on the beads, then:

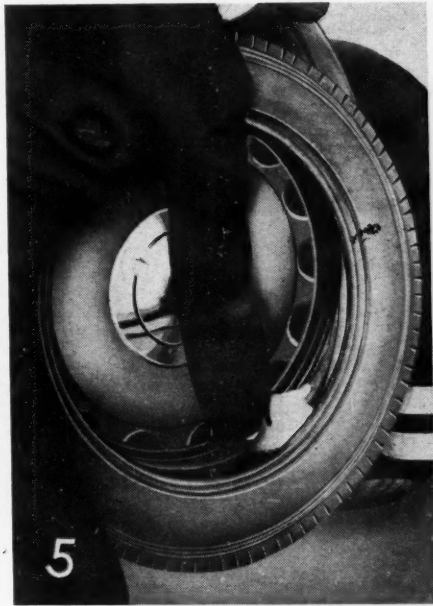
1. Deflate tube, loosen both tire beads on rim seats. Push outer bead off rim seat at bottom and pry bead over rim flange at top.

2. Work around flange with one tool until outer bead is over the rim flange. Reach in and pull tube out of casing.

3. Force inside bead down into center of rim at top, and pull bottom of tire inside bead over rim flange. Lift up to remove tire from wheel.

4. With tube in tire, partly inflated, place inside bead in center of rim and locate valve stem in position. Force inside bead over rim flange.

5. Lift up and force outer bead over rim flange at top. Work around tire with rim tools to force outer bead over rim flange.



6. Check to see that beads are seating on bead seat of rim. Inflate tube until both beads are in proper position, then deflate tube. Inflate again to proper pressure.

If the wheel has been removed from the axle or carrier:



7. Deflate tube and loosen bead from bead seats on rim. Stand on tire opposite valve stem and pry outer bead over rim flange. Remove tube.

8. Stand tire upright and locate inner bead in center of rim. Pry inner bead over outer rim flange as shown.

9. To install, locate valve stem in hole and place inner bead in center of rim. Use tire tool opposite valve stem to force inner bead over rim flange.



10. Force outer bead over rim flange at valve stem, and pry outer bead over rim flange, working around the wheel as shown in illustration.



T. H. Stambaugh



HINTS FOR CAR STORAGE

GASOLINE rationing in States along the Eastern seaboard, and the nation-wide restrictions on the purchase of tires have presented a serious problem to car owners. Some are no doubt considering laying their cars up for the duration, while others have already cut down on driving and are using their cars only in an emergency.

If it can be arranged, it is much better for the car to keep it in active service even if it is driven only 10 or 15 miles every week or so. Under this system, the owner is more conscious of his car since it is available for instant use should the occasion demand, and therefore will take normal care of it. A short drive every now and then will be sufficient to keep the battery in condition so the plates will not sulphate. The owner will form the habit of having the tire pressure checked each time he has the car out, the possibility of parts corroding as the result of oil draining from the surface will be eliminated, and the owner will keep the car clean and will have it polished occasionally. In short, the car will re-

If a customer insists on laying up his car, here are some suggestions that will enable you to keep it in condition for use when our supply of gas and tires returns to normal

By T. H. STAMBAUGH

Director, National Service Operations
Hudson Motor Car Co.

ceive the same kind of care as it would if it were in constant service, but will last indefinitely because it actually is being called upon to give very little service.

It would be difficult for a car dealer, with a large number of new cars in stock, to drive each one a short distance each week or so to keep them in condition. These cars must be properly prepared for "dead storage" for an indefinite

period, and certain steps must be taken if these cars are to be still in new-car condition when they are eventually offered for sale.

The same steps must be taken by any car owner who finds that he cannot give his car that occasional drive which will keep the battery charged, the parts lubricated and free from rust and the tires from deteriorating.

(Continued on Page 48)

LUCKY DUCK!

Saves You Worry

JONE'S

Call
Bitz 3232



See Reverse Side Now

GARAGE

DAY & NITE
SERVICE



LUCKY DUCK!

Saves you worry in any emergency. Put this card in glove compartment of your auto. LEAVE IT THERE. When you need help on the highway—use the nickel attached hereto to call our garage for prompt and efficient service.

The nickel will pay your phone call and 2% will be deducted from your bill when the used card is returned to us—and we will give you a new card, insuring you of service when you need it!

Car Owner

Make

Date

(To Be Valid Must Be Signed and Used on Car Shown)

A.R. Jones mgr.
Wm. J. Peters
Plymouth
6-9-42

Jone's Garage

GETTING new customers into your shop is probably your most perplexing problem. It was for me, and, after careful thought, I decided on a method that would enable me to profit from the normal hazards motorists encounter on the highways.

To this end I designed an inexpensive and thoroughly practical bit of attractive advertising, which I used while working for an automobile dealer at Bloomington, Ind. I gave each prospective customer a nickel; this boosted my sales and the company's volume about 20 per cent.

Just as easily, you, too, can do as I did. Hand your customer a "Lucky Duck" card, which you can have printed at a nominal cost, or which you can sketch by hand. Then watch the motorists who are in distress beat a path to the doors of your shop.

Let me tell you more about these "Lucky Duck" cards which I have used so effectively.

A "Lucky Duck" card is the motorist's worry-saver. It assures the motorist in distress of that "emergency service" so urgently needed when his car refuses to function and he is miles from expert help. He carries his "Lucky Duck" card in the compartment of his car, where it will always be handy whenever he runs into trouble along the road. In addition to advising the motorist in need how to proceed to get your help,

"Lucky Duck" cards furnish you a means of keeping accurate and useful records on the identity of your clients, their makes of cars, year of manufacture, and the like.

The accompanying illustration shows sample text, which you may employ on the "Lucky Duck" cards you use.

The interest you show by antici-

pating the needs of owners when they run into trouble is something they'll appreciate and remember. Customers invariably like to spend their money with shops that are "Johnny-on-the-spot." "Lucky Duck" cards are a safe, practical, and economical answer to your perplexing problem: How to get new customers.

CUSTOMERS

5¢ EACH

**This inexpensive good-will stunt
will keep customers coming back**

By R. AYRES SCHOFIELD



"Can't you forget you wanted to be a doctor? The man just asked you to look at his starter button!"

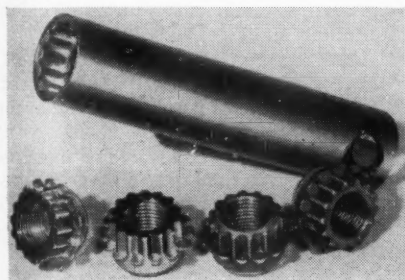
NEW profit makers

PARTS TOOLS EQUIPMENT ACCESSORIES

Wheel Lock

A new type of wheel lock has been designed by The Kathanode Corp., Saint Paul, Minn., to prevent the stealing of wheels and tires.

This locking device is known as the Kathanode Tire-Lok and is made up

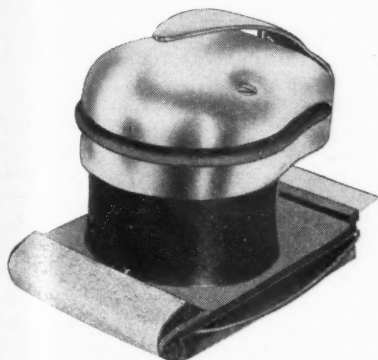


in sets of four nuts and a special wrench.

The locking nut replaces one of the wheel stud nuts and is screwed on the wheel stud by means of a special socket wrench. The nut cannot then be removed with the usual pipe wrench, socket wrench, or pair of pliers, as they will not supply sufficient grip.

Midget Sander

A new development in small-size block sanders has just been announced by National Air Sander, Inc., Rockford, Illinois. The new unit known as the "Mity-Midget" is hand size, and elimination of vibration is claimed as one of its leading features. Because of its size, it is suitable for close fillet work and small surfaces



as well as large areas. The manufacturer states that the "Mity-Midget" actually cuts labor and abrasive costs up to 75 per cent over hand operations.

Both wet and dry sanding is possible and for operation only 5 cu. ft. at 50 lb. pressure is required.

Cleaning Polish

The Albionite process is a new method of protecting and preserving all types of car finishes and is a product of the Jones Products, Inc., 167 Second St., Cambridge, Mass. One of the features claimed is the ease of application, since there is no necessity of continuous rubbing and polishing in order to bring up the luster. The Albionite process is both a cleaner and sealer.



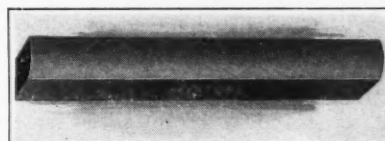
Parfax Lay-Up Kit

Parfax Auto Lay-Up Kit, produced by George F. Hutter, Buffalo, N. Y., and distributed by the Parfax Sales, 266 Bryant St., Buffalo, N. Y., is manufactured for owners of automobiles who are about to lay up their cars for the duration of the war. Each kit is for a single car, and the manufacturer states that it contains material to protect twelve items—radiator, motor, battery, starter, transmission, differential, gas tank, springs, chrome trim, generator, moving parts, and steering apparatus.

Polishing Pad

All traces of abrasion, sharp edges and bent-over particles are said to be removed by Keystone Polishing Pads

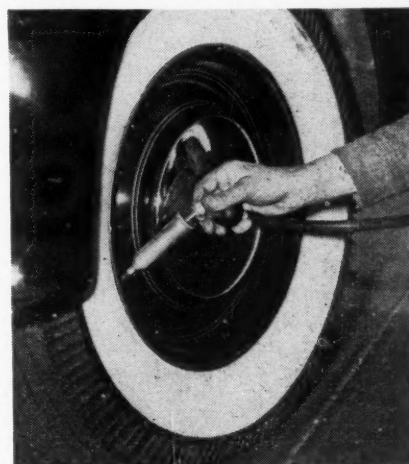
after grinding cylinder wall. These pads are a new product of the Keystone Carbon Co., Saint Marys, Pa., and are designed to create an inert



finish on the cylinder wall and premature piston and ring wear are claimed to be eliminated. Keystone Polishing Pads are furnished to fit standard sizes of grinders and hones and can be made into any size or shape.

Static Powder Applicator

United States Rubber Co., Akron, Ohio, recently announced its Automotive Static Neutralizer powder designed to eliminate annoying static charges being built up in the car tires. To simplify the injection of this into the tires, the company now announces a Static Powder Appli-



cator. The applicator is screwed to the tire valve like an ordinary valve cap and, by means of air pressure, the Static Neutralizer powder is forced into the tube. Less than one minute is required to treat each tire.

Tighter Gas Rationing Effective in East July 22; Texas-Illinois Pipeline to Boost Crude Delivery

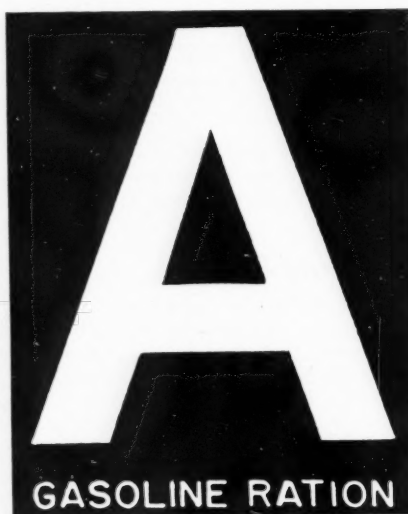
AS June ended, Eastern motorists had ceased to worry about the type of ration card they had, and started to worry about getting gasoline. The shortage in the East had become acute, and every filling station that admitted it had gasoline in its tanks became the mecca for lines of cars that stretched for blocks. Millions of gallons were released June 29 to tide over essential users, but for the average car owner the outlook was dry.

Beginning June 29, the OPA authorized a 2½ cents a gallon increase in the price of gasoline in the East to help offset the heavier transportation costs, and in New York dealers protested, alleging the increase was going to the refiners.

Two bright spots were the WPB order approving the proposal to construct a 24-in. steel pipeline from Longview, Tex., to Salem, Ill., and a House-approved bill would permit the construction of both a pipeline and a barge canal across Florida, but no official indication has been given that these projects, even when completed, will deliver enough gasoline to the East to remove the need for rationing. Extension of rationing to the remainder of the country apparently has been postponed indefinitely, for which fact part of the credit must go to protests of Congressmen representing the affected areas. If the objective of rationing, as several Washington officials have stated, is to reduce tire wear, it is a little difficult to see why Eastern tires are more worth saving than Western tires, yet nation-wide rationing is still in the conversation stage.

Permanent rationing in the East, effective July 22 will differ from the temporary plan which has been in effect since May 15. Motorists will register for the second time on July 9, 10, and 11 at public schools, but this time they will receive only A books for the basic ration of 48 four-gallon units a year. The 48 coupons are printed eight to a sheet, each sheet covering two months. Coupons may be accumulated during a two-month period, but are void after the period for which they were issued.

Those who believe themselves en-



Windshield sticker to be issued owners in East when they register for gasoline rationing July 9, 10, 11. Those who later apply for and receive supplementary coupon books B or C will be given stickers that correspond to the letter and color of the book.

titled to more gasoline than the basic ration must apply for supplementary books to their local rationing boards. To obtain a supplementary book of coupons, the applicant must prove either that he has formed a "club" of four members to use the car for which additional fuel is sought or that other means of transportation are not available.

For passenger cars there will be two types of supplementary books, B and C, neither of which, like the old X book, is good for unlimited quantities of fuel. The B book will contain 16 coupons and must last the user for at least three months. C books will contain a maximum of 96 coupons. These books will be obtainable only by persons engaged in providing medical care, maintaining public utilities, carrying farm labor, giving religious comfort or assistance, and making official trips on government business. When the car owner receives a C book, it will contain only as many coupons as he can prove the need for. D books will be issued for motorcycles.

Unlike the temporary regulations, the permanent rationing plan includes trucks, buses and taxis, which will receive S books. Each book will provide sufficient gasoline for four months' operation. E and R books will be issued for non-highway users, including boat owners.

The permanent regulations close the loophole that caused so much trouble under temporary rationing. Retailers must detach a coupon for each unit of fuel sold and must turn them in to their suppliers to replenish their stock.

Each coupon book will have a distinctive color, A black, B green, C red, D blue and S brown. Each car or truck owner will receive a sticker of a corresponding color. This must be pasted to the windshield of the vehicle, presumably to let an owner's neighbors know what kind of book he has obtained.

To permit strict control of his stocks, the service station operator must take an inventory of his fuel stocks on opening July 22 and must file an affidavit with his local board, telling exactly how much gasoline his tanks contain. The board will then issue him coupons for the difference between the fuel he has on hand and the capacity of his tanks. To obtain gasoline after that, he must turn in the coupons he collects from customers.

The coupons removed from customers' books are to be turned over to the supplier at the time delivery is made to the station. The retailer must sign an "acknowledgment of receipt of gasoline" which the tank-truck driver will turn into his head office along with the coupons he received from the station. The retailer also will be supplied with a form on which he will list the number of coupons he turns over to his supplier, along with the gallon value of each coupon. Drivers are to initial this form as a receipt for the coupons.

One of the most cheering items of news during the month was the WPB approval of the 550-mile 24-inch pipeline from Longview, Tex., to Salem, Ill. This line, constructed of cast iron and seamless steel tubing, will deliver 350,000 barrels of crude daily to Illinois, whence it will be transported by railroad tank cars and other carriers to the East. The line is expected to be completed by Dec. 1 this year.

WASHINGTON WHISPERS



Less hopeful is the Florida project for building both pipelines and a barge canal. The House had defeated the canal project several times in the past and defeated it again on June 1, but later in the month it reversed itself. Advantages of the canal have never been convincingly stated, and certainly, with three years needed to complete, it will make little contribution to the present gasoline shortage, unless we expect to be fighting more than three years longer. The pipeline proposed would require crude to be transported by barge across the sub-infested Gulf of Mexico and fed into the Gulf end of the line. Harold Ickes, as petroleum czar, approved the construction of the eight-inch line, and the House in an amendment to the barge bill voted for a pipeline all the way from Mississippi's oil fields to Florida's east coast. President Roosevelt, of course, was empowered by the Cole Act of last year to approve any pipeline he considers necessary to national defense.

In all these actions and proposals, however, official Washington insists that no gasoline will be available for non-essential driving for some time to come. The discrimination existing between the East and the rest of the country seems likely to continue until Congressmen can act without fear of retaliation in the November elections.

Tires for 20,000,000 Cars Proposed in Senate Bill

UP to this time, the brightest hope of getting replacement tires into the hands of passenger-car owners rests upon a bill now before the Senate to make 3500 tons of crude rubber available for use in recapping and retreading tires for civilian cars.

The bill, introduced by Senator Ellender, of Louisiana, and Senator Murray, of Montana, would keep 20,000,000 cars in operation, its authors declared. They have been informed, Senator Ellender testified before the Senate Banking and Currency Committee, that only two ounces of virgin rubber would be required to make a satisfactory adhesive for the reclaimed rubber in a recap or retread. Such recaps or retreads would be made available only to war workers
(Continued on Page 66)

*TRANSPORT TOPIC

There was a plan afoot in the Motor Transport Corps of the Army to attempt to recruit all those mechanics who were draft bait, and knew it, into the enlisted reserve. In this way, they could be held out of the draft until a Motor Transport unit was formed and needed mechanics, at which time they would be called to active duty. The purpose was, of course, to put mechanics at mechanical work in the Army where they are sorely needed.

Somehow this plan fell by the wayside and has apparently been replaced by one in which a representative in a responsible position with a company like General Motors, Ford or Chrysler is to be commissioned as an officer in charge of a Motor Transport unit. This officer will be in charge of recruiting and organizing the personnel of his unit. It may even be known unofficially as a General Motors, Ford or Chrysler unit.

Both plans would appear to get efficient personnel into the motor transport, but the second one leaves the unattached mechanic subject to the draft and assignment to the medical corps or M. P. duty in Pennsylvania Station unless he can find the gent with the commission and get a word in for himself.

*TWO-PIECE VALVES

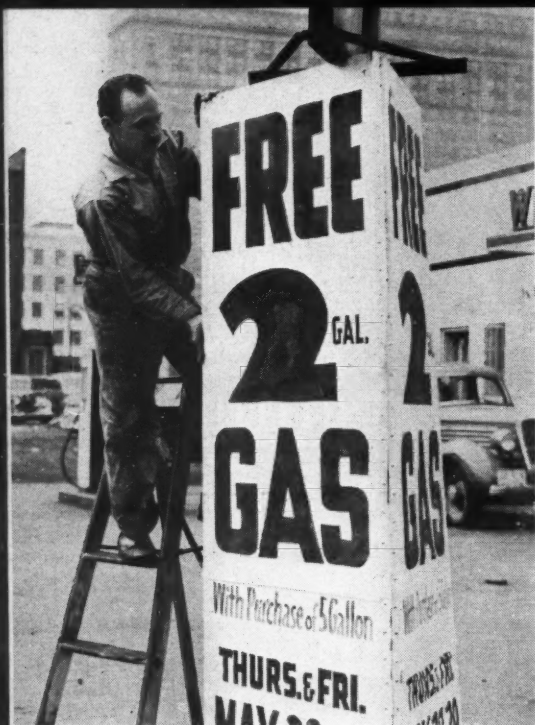
One of the brighter young men over at WPB got the idea that, if all the chromium was removed from automotive valves, a lot of chromium would be saved. His premise was correct but, like the lad who thought he had discovered the universal solvent but could not decide what kind of container to keep it in, our WPB'er forgot that if all the chrome were removed from automotive valves he could not move the chromium he had saved because no automotive vehicles would be moving. Actually his theory ran right smack into the War Engineering Board report on the subject by the best metallurgists in the country, which says in effect that there is no substitute for chromium in valves.

Still chromium is on the critical list and has to be saved. The result is the announcement of two-piece valves. In the head there will be some chromium and in the stem there will be none. It is expected that this type of valve will save somewhere between 20 and 50 per cent of the chromium that would normally be used in valves.

*PARTS SHORTAGE

The Office of Defense Transportation is putting on an educational campaign to promote rebuilding of parts and units in any way possible. This is done because of the feeling that we cannot possibly have enough parts available to keep highway transport operating at its usual rate of parts consumption. Some shortages are making themselves felt already and there will be more. This provides the shop man with a chance to show the ingenuity we all brag about so much. The fellow who can repair things is going to be a lot better off than the mechanic who only knows how to replace them.

(Continued on Page 48)



NEWS



HORSES AND BUGGIES

AS a nation we are committed to preventing the return of the era known as the "horse and buggy days" but certain pictures in the newspapers have led to the suspicion that we are not doing a perfect job. These pictures, showing victorias and carriages on city streets, newly erected watering troughs for horses in big-city wholesale areas, and the rebirth of hitching posts in swank shopping districts, may lead readers to conclude that the horse can, at least partially, supplant the automobile for the

GIVE AWAY. While automobile owners in East struggle along on three gallons a week, this Cleveland station, top left, tries to pep up its business by giving gasoline away.

SPARE-TIME JOB. Building his own motor, Technical Sergeant Kuentz, of Kelly Field, Tex., produced this homemade motor bike. It weighs 70 lbs., gets 70 miles a gallon.

duration. The truth is, it cannot be done.

A complete census of horses and mules in the United States is difficult to obtain but the Department of Agriculture reports that there were only 14,602,000 such animals on farms in 1941. For all practical purposes, this is the total for the country, as only a negligible few draft animals exist in cities.

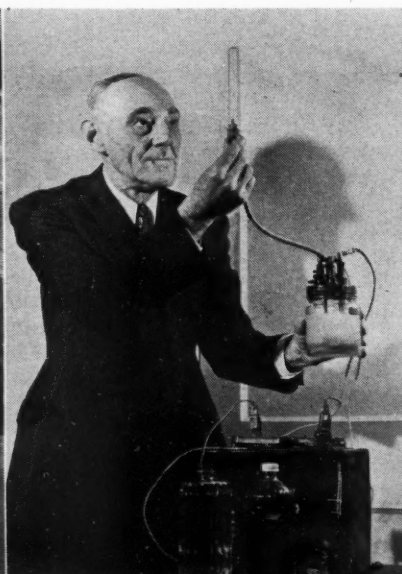
Ignoring the factor of speed, which is the all-important advantage of the automobile, 14,602,000 horses and mules would make a pathetic show of attempting the work done by 27,000,000 passenger cars, even if all of them could be so used. They could not be used for this purpose because all of them, except those momentarily in the hands of dealers, are busy with their accustomed work.

So despite the occasional stunt, to which newspaper photographers are invariably invited, we haven't got the horses and mules to let us go back to the horse and buggy days. Figures

SPEED COP. With the aid of photo-electric cells, this device is able to compute the speeds of automobiles automatically. It will be used in studying traffic snarls.

WATER POWER. Anthony Morch, New York inventor, demonstrates his method of converting water into motor fuel. Combustible hydrogen gas is set free by electricity.

JUNIOR SPEEDSTER. Herbert Rimlinger, 13, gets some pointers on outboard motors from his father. The elder Rimlinger was national runabout champion two years ago.



DETROIT LETTER

By ED WARNER

on buggies are not available; no one has taken a census of museums lately.

POST-WAR PROMISE

SO far as fighting the war is concerned, we've hardly got our feet wet, and thus have no right to be laying plans for post-war business, yet it does no harm and may be a little cheering to wonder what things will be like. In the automobile business they ought to be far better than they will be in many lines.

The level of activity will depend to a great extent upon the length of the war. No one can say definitely when the war will end, but only incurable optimists expect it to last less than a year more. If a year more of war is a good guess—and only time can prove a guess good or bad—there will be time enough for the American market to build up a considerable backlog of unfilled needs for new cars.

Based on a car-life expectancy of
(Continued on Page 42)

Reports from the field are coming into the automobile factories every day. But they are not the usual peace-time reports on the comparative retail sales of Chevrolet, Ford and Plymouth in Los Angeles or Atlanta. These are reports on a grimmer business than salesmanship. They detail the performance of armaments and weapons of war on the far-flung battlefronts of the United Nations. And most of the reports are favorable. The chief complaints from the field are that there are not enough weapons, which emphasizes the tremendous shipping problem which confronts the U. S. in a war that is being fought on a world-wide basis.

More than seven months have elapsed since Pearl Harbor, and during that time automotive plants have delivered war goods whose value exceeds \$1,700,000,000. This is more than the total retail value of passenger cars sold in the U. S. in 1933, when 1,889,000 cars were marketed. Total war orders of the automobile

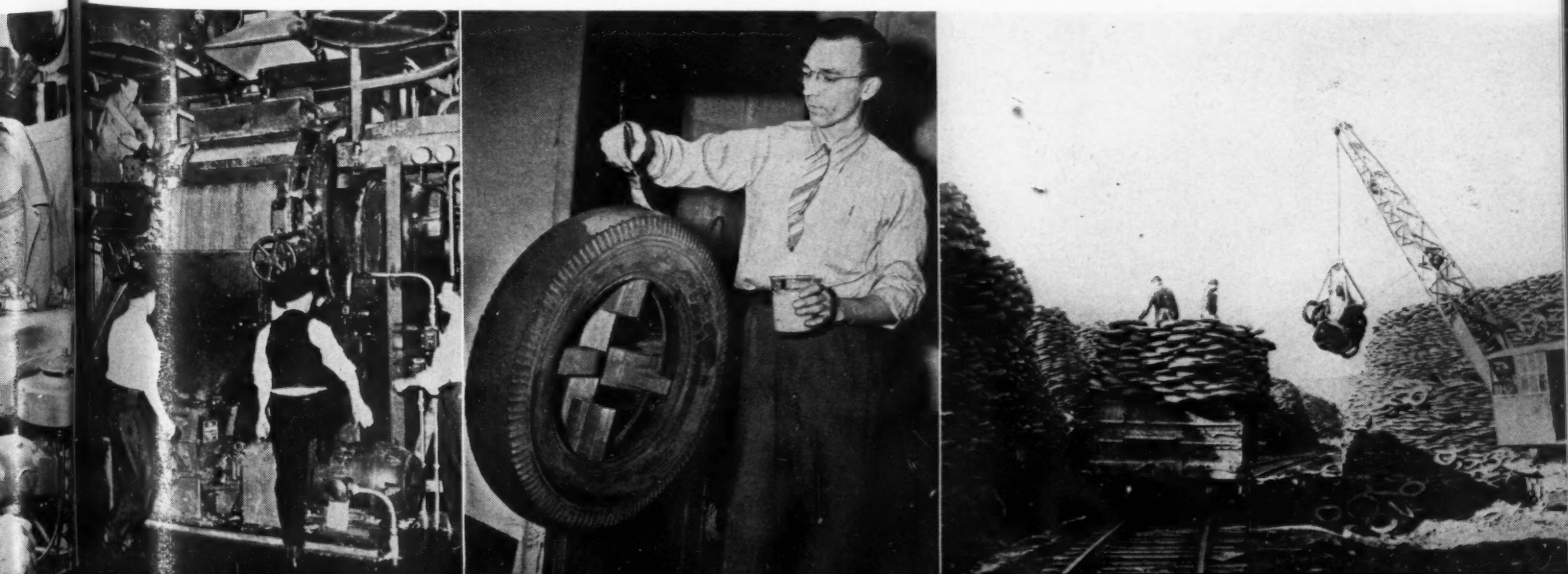
industry now exceed \$14 billion, a production job calling for materials and men sufficient to produce 15 million cars and trucks, a three-year task under normal peace-time conditions. The automotive industry alone has been asked to build 75 per cent of all aircraft engines, more than one-third of the machine guns, over two-fifths of the tanks and more than one-half the Navy's Diesel engines, as well as 100 per cent of the motorized equipment.

The engineers, executives and production workers in the automobile factories are taking pride in the performance of their products on distant battlefields. News reports are scanned eagerly to see if equipment from a particular factory has helped achieve a victory for the United Nations. The British used Chrysler-made medium tanks in their desperate desert combat with Gen. Erwin Rommel and his Nazi forces in Libya. Leland Stowe recently reported from the northern
(Continued on Page 60)

WAR RUBBER. New government-sponsored synthetic plant of the Goodyear Tire and Rubber Co. delivers its first "rubber". The plant will boost production by 15,000 tons.

PAINTED MILES. John Lange, Trenton, N. J., paints a worn tire with a new type of synthetic rubber. Called Thiokol, it is said to add many miles to life of tires.

ACRES OF RUBBER. These great stacks of discarded tires and tubes cover more than 20 acres at the Akron, Ohio, reclaiming plant of the Firestone Tire and Rubber Co.



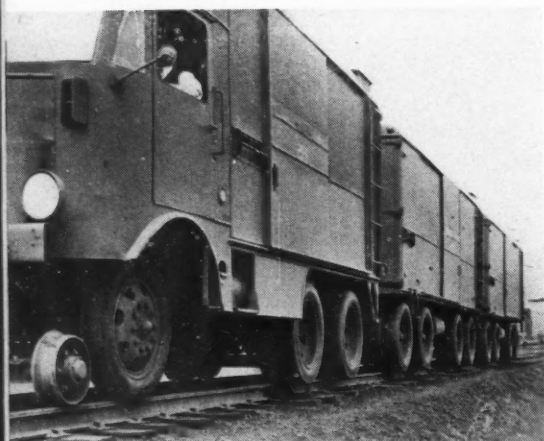


SALES APPEAL. The boss of the Seymour Service Station in Los Angeles gives his pump attendants a morning lecture. In the East a wooden Indian could sell gasoline.



GAS SHORTAGE? Mrs. David Meade Lea, of Washington, D. C., refuses to worry about it. She drives what is said to be the only electric car still in use in the Capital.

ROAD TRAIN. Two-in-one train, with locomotive and cars equipped with both rubber and steel-flanged wheels. It can travel steel rails or highway with equal ease.



POST-WAR PROMISE

(Concluded from page 41)

nearly nine years, a reasonable estimate is that 3,500,000 passenger cars will become candidates for the junkyards between the cessation of production early this year and Aug. 1, 1943. No cars will have been produced in this period, so 3,500,000 cars is the estimated number that must be made and sold to restore national registration to the 1941 total. At the same time, the two-year-old cars in the country will total 3,731,166, the number registered last year. This is the age group generally considered to offer the finest new-car prospects.

The longer the war lasts, the greater will become the backlog of unfilled needs. By Aug. 1, 1945, it would total 8,600,000 cars.

It is unlikely that such a huge number of cars actually will be junked, for every automobile in the country will be driven just as long as repairs and replacement parts can keep it running. Still, the moment new cars become available, which should be within six to eight months after the war ends, the clunkers that have been operating on borrowed time will be dispatched to the graveyards.

The other important factor regulating the proportions of the post-war market will be national purchasing power. We have the estimates of various economists and politicians that the national income will be maintained at well over \$100 billion a year, a figure likely to be attained for the first time this year, but even this will not be so impressive when expressed as purchasing power.

It is the fashion today to speak of taxes as hedges against inflation, as patriotic contributions to the war effort, and as a method of soaking up "excess" purchasing power. Yet they remain taxes, and, as such, they reduce the amount of the national income that can be spent for goods; in other words, they increase the cost of living. If they are permitted to climb to fantastic heights and remain there after the war's end, they will nullify a large part of the \$100 billion national income, which at best is only an estimate and not even a promise.

Sensible taxes, plus the savings laid by during the war, would leave enough of post-war national income to replace worn-out and obsolete goods of all kinds. Since the automobile has for years been a symbol of well-being as well as a prime necessity to national life, it goes almost

without saying that the automobile will be the first product replaced.

The service picture during the immediate post-war period looks bright. Although the first cars will roll off assembly lines within a few months after the armistice, it obviously will be impossible to supply every buyer with a new car for several additional months. Meanwhile, lifting of restrictions on fuel and tires ought to stimulate the used-car market and encourage owners of old cars to put them into something like first-class shape so that the fullest benefit may be derived from them until new-car production reaches a level that makes it possible to replace them.

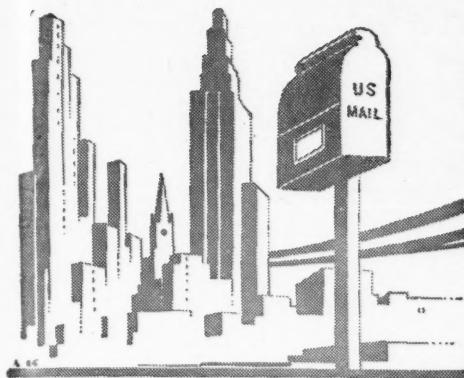
One phase of the automobile business that certainly will boom once victory has been won is tire selling.

During 1940, more than 22,000,000 new tires were built for replacement in this country, but the first year of peace will require many times that number. Two years more of war will reduce car owners to dependence upon retreaded and recapped tires or perhaps tires made entirely of reclaimed rubber, since government officials continue to be pessimistic about civilians' chances of obtaining rubber of any kind before 1945. This would mean that every car remaining in serviceable condition in 1944 would constitute a market for four new tires. Say that at least 20,000,000 cars will be kept in operation, as many students of our transportation system insist they must, and the market for new tires immediately after the war will be 100,000,000 tires.

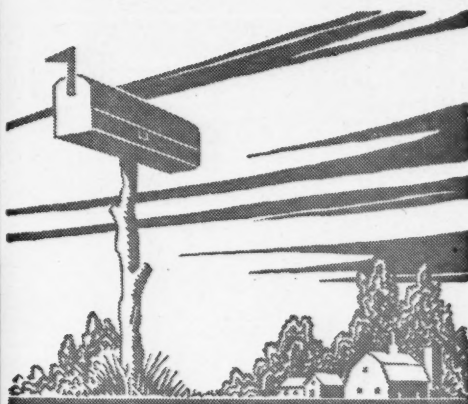
ROAD SERVICE

An interesting analysis of the emergency road repairs made by its affiliated service shops during 1941 has just been released by the American Automobile Association. These shops answered 31,000,000 calls during the year, compared with 35,000,000 in the previous twelve months.

As usual, tires were responsible for the greatest number of emergency calls, 30.7 per cent to be exact. This compares with 27.7 during 1940. Since tires certainly got no worse in 1941, the increase probably indicates greater neglect. If so, it is a situation that is being rapidly corrected by the current rubber shortage. The ignition system was the next most frequent offender, the battery alone accounting for 14.6 per cent of the calls and the rest of the system accounting for 14.7 per cent.



Bill Toboldt, Editor, Motor Age



THE READERS'

CLEARING HOUSE

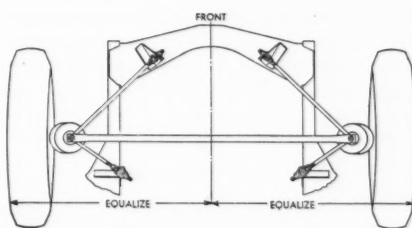
of Servicemen's Queries

NEGATIVE CAMBER

Here is one I would like a little advice on: I have had a 4140 Nash with $\frac{1}{2}$ degree negative camber on both sides and the problem is to set it so it will have from zero to $\frac{1}{2}$ degree positive camber, as specifications call for. On page 932 in the 16th edition manual it says in the last three paragraphs under Nash 4140 that by increasing the camber on one wheel decreases it the same amount on the opposite wheel. Now how in the devil would you increase it on both sides?

It seems to me that whatever you do you will end up with negative camber. Hope you will be able to give me some help on this.—K. O. Fulmider, Lewisburg, W. Va.

THE description for adjusting caster, camber and toe-in as given in the Chilton Flat Rate and Service Manual is correct, but just to be sure I have checked with the local Nash factory branch and they confirm it. Therefore, if you have a Nash with $\frac{1}{2}$ degree negative camber on both sides, it indicates that the tube connecting the top of the suspension and which passes over the top of the en-



gine has become bent or is otherwise too short. Of course, there is also a possibility that you have enough play in the system which would give you $\frac{1}{2}$ degree negative camber on both sides. Naturally, if such is the case, it would be necessary to make the replacement of the worn king pin and bushing or other worn parts.

I therefore suggest that you make a careful check of the system for any wear and then, after that has been repaired, if you still have the negative camber on both sides, it will be necessary to lengthen the connector rod across the top of the engine.

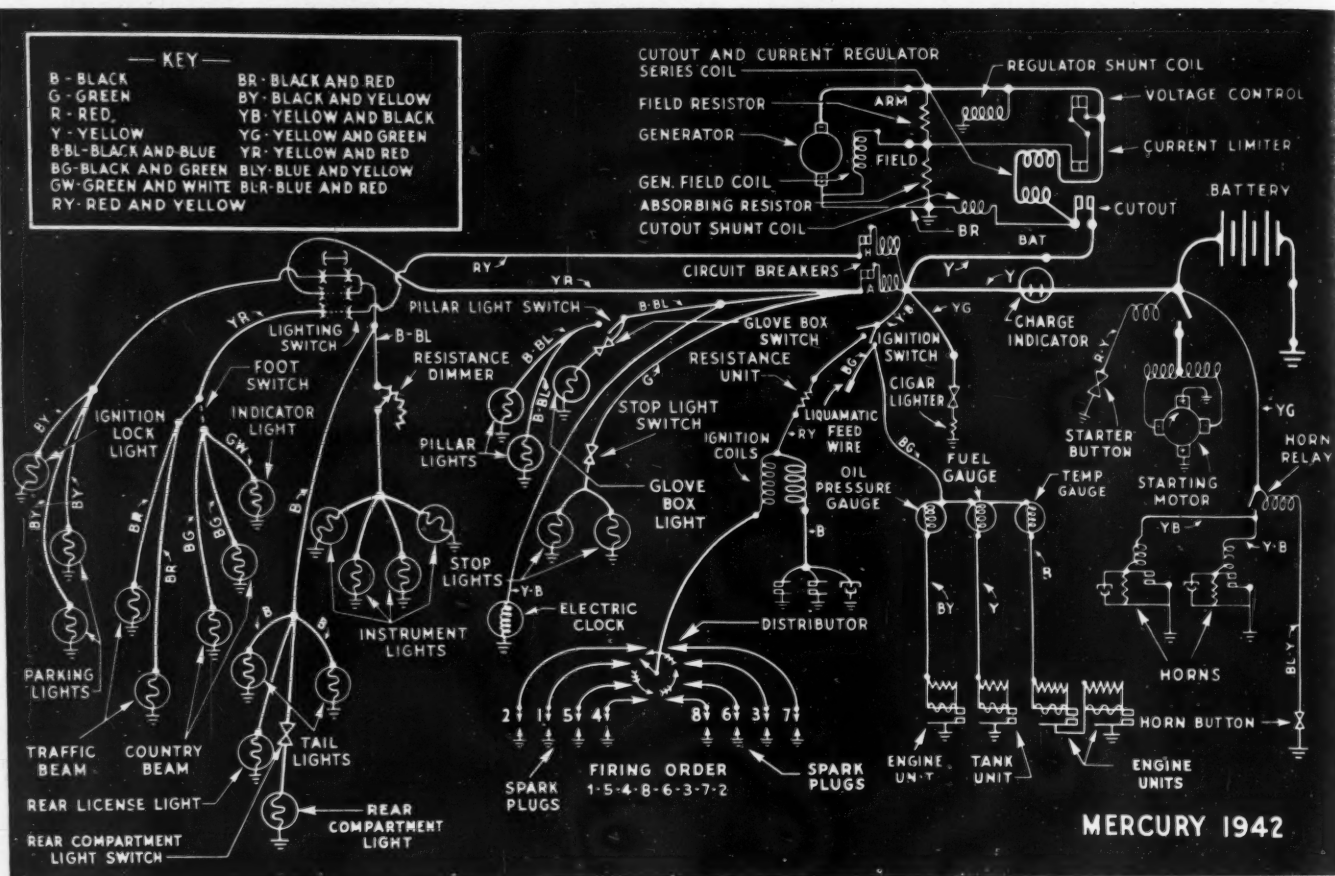
This is the first time I have run into this particular kind of trouble, and I would certainly appreciate it if you will drop me a line and let me know how you make out.

TWO QUITTERS

I have a 1942 Ford de luxe sedan and at different times the motor will stop and will not start again. This happens only when motor is hot. It sounds like vapor lock, but I have checked this and have had no success. If you stop at a stop sign, the engine will quit and will not start until hand throttle is pulled. Motor starts O. K. when cold and otherwise performs all right.

I also have a 1936 Studebaker Dictator sedan. This motor will not take the gas when you step on it after stopping at a stop sign. If you put shift in low and race motor, it will take gas O. K., but, if you slow down to about 5 m. p. h. and step on gas to pick up speed, it seems to cut out entirely, until you drop into low and start all over shifting again. I keep heater valve in manifold loosened up so that it works free, but I still have this trouble, and it is kind of aggravating at times.—Alec Leonard, Duluth, Minn.

ON the 1942 Ford de luxe sedan on which the engine will stop, I am inclined to believe that your trouble



Wiring Diagram—1942 Mercury

might be caused by a defective economizer in your carburetor supplying an excessively rich mixture.

I would suggest that you either install an exchange carburetor or rebuild the present one. In addition, it might also be advisable to check the fuel level in the float chamber and also make sure that your fuel pump is not supplying excessive pressure.

On your 1936 Studebaker Dictator, I am not so sure as to what might be the cause of your trouble. However, I am inclined to believe that here again it is carburetor with clogged jets. I would, therefore, recommend that you thoroughly clean out the entire carburetor, making sure that all the jets and passages are clean and also that the fuel level is correctly set. If this does not overcome your trouble, check the automatic advance and the distributor to be sure that this is giving the proper amount of advance.

REMOVING OIL PAN

What is the quickest way to remove the oil pan on a 1941 Nash 600? I have been told that it takes four hours or longer to do the job.—G. A. French Automotive Service, Albany, Cal.

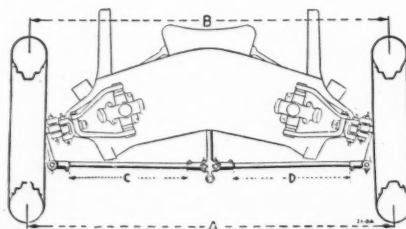
TO remove the oil pan on a 1941 Nash 600, it is necessary to loosen the front-axle assembly and move it forward so as to permit removal of the oil pan. This involves quite a lot

of work, as you have to remove the bracket which fastens the lower end of the shock absorber to the front axle, and then disconnect the Pitman arm, disconnect the rod connected to the upper end of the shock absorbers and also loosen the front caster rod. This will permit the movement of the front-end assembly forward, which will in turn permit the removal of the oil pan.

TURNING RADIUS

What method have you found best to correct turning radius on Chrysler products without increasing road shock?—Herb's Auto Service, Oakland, Cal.

FIRST adjust the long tie rod to measure 31-13/32 in. on the C-7 and C-8, 31 1/8 in. on C-18 and C-22, and 30-25/32 in. on C-19 and C-23, between the centers of the tie-rod balls. Adjust the short tie rod to obtain the toe-in measurement as given



in Motor Age specification tables or the specification tables in the Chilton Flat Rate and Service Manual. On other Chrysler cars, adjust the toe-in after first making sure that the front wheel bearings are properly adjusted and then set the intermediate steering arm and front wheels in a straight-ahead position. Loosen clamp bolt at ends of rods and turn the tie rods an equal amount to lengthen or shorten them until you have obtained the desired toe-in. On models prior to 1940, measure to make sure that both tie rods are the same length after adjusting.

I am quite sure, if you will follow these instructions, you will have no more difficulty from road shock, provided, of course, that your steering gear itself and the rest of the steering system is in good condition and properly adjusted.

TOO MUCH OIL

I am having trouble with several 1941 Buick cars. In each case, the difficulty is excessive oil consumption and fouled spark plugs. New 14 mm. spark plugs have been installed, but the trouble continues. What can you suggest that will overcome the trouble?—Allens Garage, Albany, N. Y.

INSSTALLATION of 14 mm. spark plugs of the proper heat range should help materially in overcoming this trouble. As you know, these cars

were originally equipped with 10 mm. plugs and the factory later changed these to 14 mm. Another factory change was the installation of a different crankcase ventilating system which improved the breathing characteristics and helped reduce plug fouling and oil consumption. If your trouble persists after making these changes, it will be necessary to install new rings.

UNEVEN TIRE WEAR

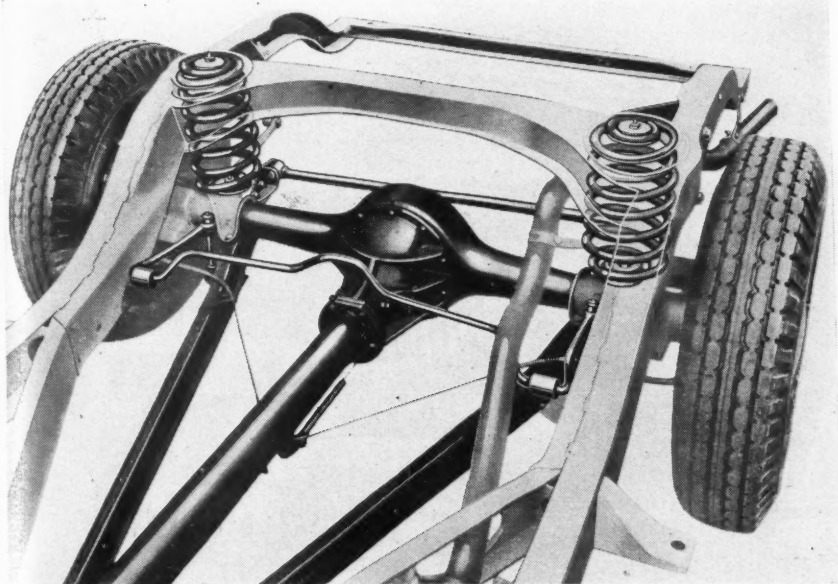
I had a 1941 Buick Special come into my shop with one rear tire wearing out about twice as fast as the others or even faster. This tire does not wear off on one side more than the other, as in the case of a bent housing, but wears evenly across and smooth. This car has not been in a wreck nor been used hard.

What can be the cause of this excessive wear on one wheel and what can be done for it?—Portage Body Shop, Portage, Wis.

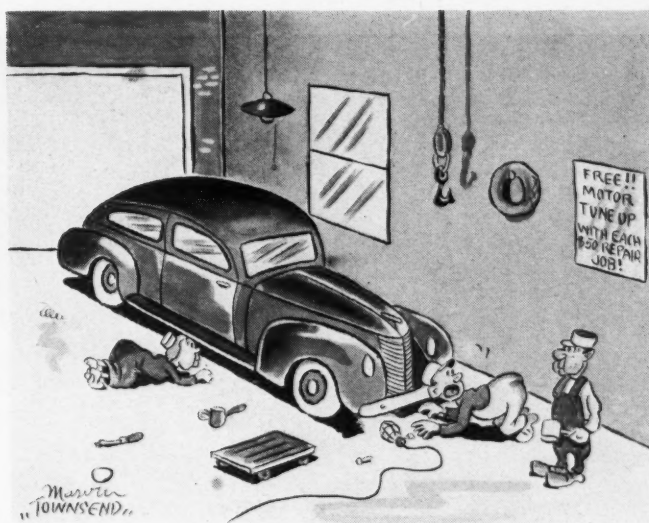
THAT is an interesting piece of trouble you are experiencing on that 1941 Buick. I would first suggest a check of the rear axle to make sure that it has not shifted. As you know, this is a coil-spring job with radius rods and, if the radius rods are bent, it will result in a shifted axle and consequently increase tire wear.

In spite of the fact that you say the car has never been in a wreck, I would recommend a careful check of the entire chassis frame to make sure it is not bent and also, that the torque tubes and rear axle housings are not bent.

If everything checks satisfactorily the trouble probably is caused by unequal braking. There is also the possibility that a defective shock absorber at that rear wheel might result in excessive wheel spinning and consequently aggravate the tire wear. However, I am most inclined to believe that the trouble is caused by a shifted rear axle.



"If you think the motor is missing, the least you can do is help you look for it."



MISSING TRACTOR

I have an Oliver 70 tractor that runs perfectly at idle speed. But, when load is put on, you have to pull choke to get it to run right. It really doesn't act like a lean mixture. It misses until choke is pulled, then it runs fine, but uses too much gasoline.

I have cleaned and checked carburetor, checked manifold gaskets, checked firing system and installed new plugs.

One mechanic says the trouble is in the magneto, but I say it can't be magneto or pulling choke would not do any good. I maintain that the carburetor should be replaced with a new one. This tractor has gravity fuel feed.—Art Ator, Rockport, Ill.

IN spite of the fact that you have cleaned the carburetor on the Oliver 70 tractor, I am inclined to believe your trouble is still there, or, if not there, at least somewhere in the fuel system. The first thing I would do would be to get another carburetor and try that. The next step would be to make a thorough check of the in-

take manifold to make sure it is not cracked at any point and that there aren't any holes between it and the exhaust manifold, which would permit the exhaust to come into the intake.

There is also a possibility that the trouble is caused by excessively worn intake valve stems and guides. Give these a careful check to make sure they are in good condition.

I certainly don't see how this trouble could be in the ignition system for, as you point out, pulling out the choke would have no effect on the missing.

I, therefore, recommend the installation of a new carburetor and a thorough check of the manifold and the intake valve guides.

PRICE DIFFERENCE

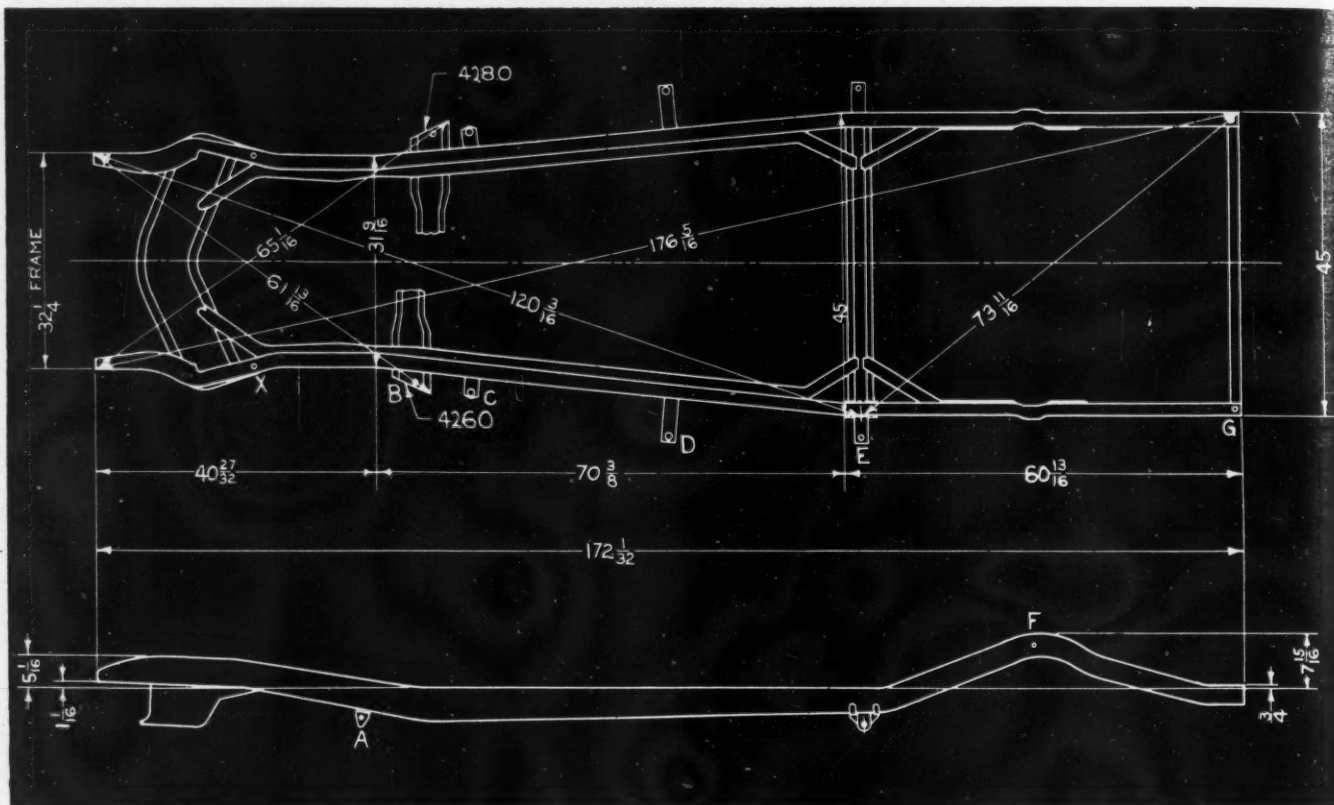
Your Flat Rate and Service Manual shows a price of \$6.10 for installing one side of the windshield on a 1936 Pontiac. This price is away above any given in other books and one insurance company here in town would not accept it on a job we did.

To install the clutch release bearing in a 1938 Ford ton truck, the Ford flat rate is seven hours and Chilton shows four hours.

Please advise us if your figure is correct.—Bannock Motor Co., Pocatello, Idaho.

I HAVE checked the price for the installation of a windshield on a 1936 Pontiac and find that our price of \$6.10 is correct. Incidentally, the factory time for this same operation is three hours, which checks very closely with our price of \$6.10, inasmuch as the Chilton Manual is priced on a \$2-an-hour rate.

Evidently you have made some mistake in obtaining the price for installation of the clutch release bearing on a 1938 Ford one-ton truck, as our manual gives a price of \$10, and, since the Truck Flat Rate is based on \$1.80 an hour, this gives a time allow-



Frame Diagram of 1942-60-80 Series Nash

(Letters A to G and X indicate body mounting locations)

ance of 5.5 hours. This is somewhat less than the Ford time, but it is still ample, inasmuch as there is a short coupling shaft between the transmission and the torque tube, which makes it unnecessary to pull the rear.

GRABBING BRAKES

I am up against a real problem concerning the brakes on three different '41 model Chevrolets. All these cars have one front wheel grabbing. It happens after the car has been left set for some time during wet weather. But, after being run for a short time, the brakes work perfectly. All cars still have factory lining, and have had this trouble since they were new. I have checked these brakes for loose backing plates, grease on lining, improper adjustment, out-of-round drums. After each check or after the drum had been removed, they worked perfectly for three or four days. Then the same trouble developed. Could this trouble be in the lining or is there something I have overlooked? I hope you will be able to give me some information concerning these brakes, for the owners are not only dissatisfied, but the cars are dangerous to drive for the first mile or so.—Calvin Russell, Bellefonte, Pa.

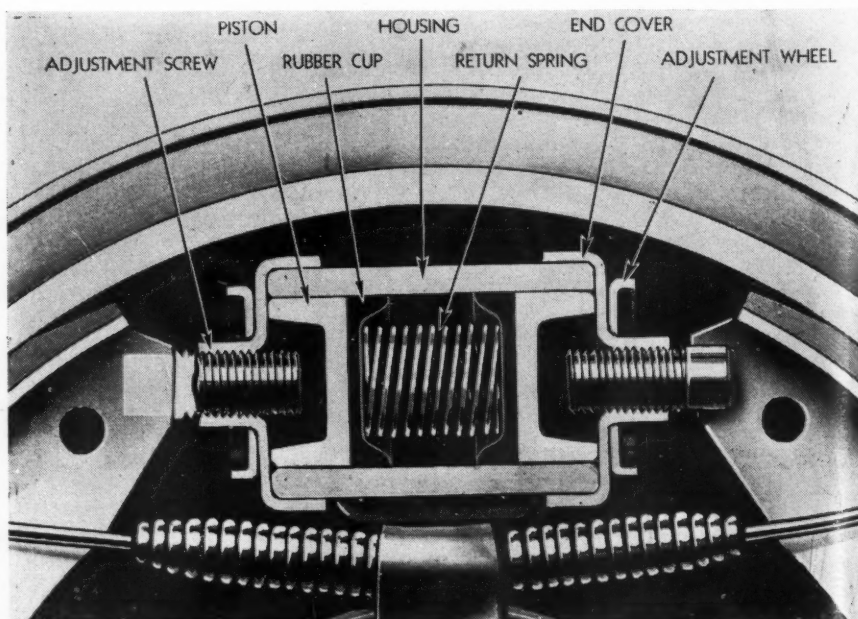
THE trouble you are experiencing on the brakes of the 1941 Chevro-

let is new to me, as I have not encountered any similar complaints. However, from the description you have given me of the trouble, my guess would be that it is due to frozen parts, clogged lines or bent shoes.

I would therefore recommend checking for swollen or clogged lines, flushing the entire system and also check for bent shoes.

OIL PRESSURE HIGH

Seldom do you hear of a customer complaining that the oil pressure is too high, but just recently I adjusted all bearings and installed four new rods in a 1940 Buick Series 50. I put No. 20 oil with 1½ qt. of break-in oil in the case. Now the oil gage shows higher than when the car was new. It shows 30 lbs. idling, 45 lbs. at 30



m.p.h., and 58 lbs. above 40 m.p.h. With the motor hot and while it is idling, the gage jerks back and forth at about the speed one rocker arm is opening or closing. I also installed a new gear-cover plate on the oil pump. Could you give me the correct pressure as recommended by the Buick factory?—Colorado Subscriber.

INASMUCH as the oil pressure on the 1940 Buick should be 45 lbs., I do not think that your particular car is developing excessive pressure. However, there is a possibility that there is a partial stoppage in the crankshaft or oil lines and it would be advisable to check them. There is an oil-release hole in the release valve, designed to reduce pressure. This hole is 1/16 in. in diameter and quite possibly it is clogged on your particular job.

I would clean all the oil passages thoroughly, including the feed line to the rocker shaft and the rocker shaft itself. Clean the crankshaft passages and then oil-pressure test the entire system. This will reveal any stoppage in the system which might account for the increase in pressure.

RATTLING POOR MILEAGE

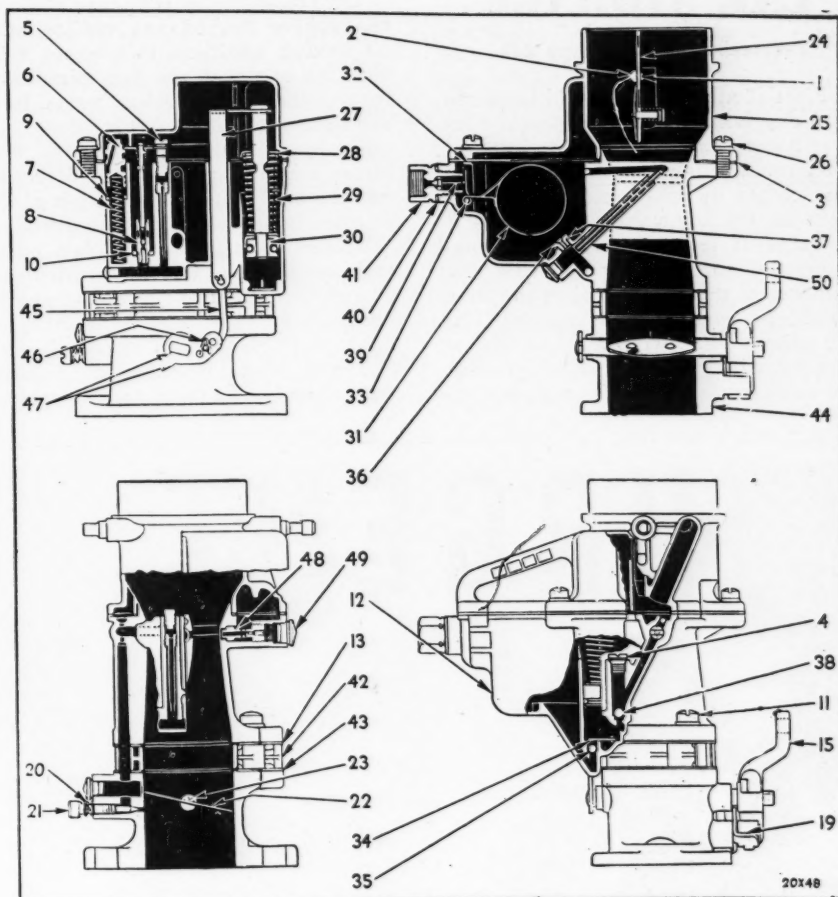
We have a 1940 Plymouth de luxe sedan that has resisted all our efforts to clear up the owner's complaints, which are as follows:

1. Gasoline mileage is not good, although everything seems to check O. K. and we have covered all angles very methodically. Would a leaner main metering-jet greatly affect performance or action of the car if we installed one? This man's interest is more toward good mileage than peak performance.

2. On this same car, there is a very annoying rattle. It comes from the rear and appears to be almost immediately below the floor of the trunk compartment just below and ahead of the spare tire. We have thoroughly checked this and have even replaced the shocks, without any success. Also, on the possibility that it might be a buckling of the side panel by the spare tire, we removed the tire and socked the panel vigorously with a hammer—no improvement.

Have you a suggestion as to what we might do? It is only when the car is moving slowly that it is very noticeable, but it is then quite loud and it really has us puzzled. Would there be a possibility of the trunk bottom rubbing on the gas tank? Is it difficult to lower the tank straps on these cars?—R. & L. Graham, Oakville, Ont., Canada.

UNDoubtedly a leaner jet would improve your fuel economy. As a matter of fact, you can obtain main metering jets one size lean or two sizes lean. Part numbers



- | | |
|---|----------------------------------|
| 1. Valve attaching screws | 26. Air horn attaching screw |
| 2. Choke control lever and shaft | 27. Pump operating link |
| 3. Body gasket | 28. Pump spring retainer |
| 4. Pump check plug | 29. Pump spring |
| 5. Idle orifice tube and plug | 30. Plunger, spring and rod |
| 6. Step-up piston, plate and rod | 31. Float and lever |
| 7. Step-up piston spring | 32. Float lever pin retainer |
| 8. Step-up jet | 33. Float lever pin |
| 9. Step-up piston gasket | 34. Pump retainer ring |
| 10. Step-up jet gasket | 35. Pump cylinder ball |
| 11. Flange attaching screw | 36. Main metering jet |
| 12. Body | 37. Main metering jet gasket |
| 13. Flange gasket | 38. Pump check ball |
| 14. Choker connector rod | 39. Float needle |
| 15. Throttle shaft lever | 40. Float needle seat gasket |
| 16. Throttle lever clamp screw | 41. Float needle seat |
| 17. Throttle lever adjusting screw spring | 42. Insulator |
| 18. Throttle lever adjusting screw | 43. Flange gasket |
| 19. Throttle shaft dog | 44. Body flange |
| 20. Idle adjustment screw spring | 45. Pump connector link |
| 21. Idle adjustment screw | 46. Pin lock spring |
| 22. Throttle valve | 47. Throttle valve shaft and arm |
| 23. Valve attaching screw | 48. Pump jet |
| 24. Choke valve | 49. Pump jet rivet |
| 25. Air horn | 50. Main vent tube |

for these are 159-66S or 159-82S. The float setting for this carburetor is 5/64 in. and is best set by means of a gage. However, of equal importance to a smaller jet is a thorough cleaning of the carburetor and a complete tune-up with special emphasis on the compression, breaker points and ignition timing. Also be sure that there are no vacuum leaks present either in the automatic advance line or past the intake valve stems.

It is rather difficult to give an accurate opinion of the annoying rattle

you describe, and, while it might be the flexing of some of the panels, I would first make a thorough check to make sure there are no tools or other loose objects which might cause a noise. In this connection, I would suggest that it would probably pay to have a mechanic ride in the trunk of the car while it is being driven slowly over a rough road to see if he can locate the source of the noise. I would also suggest removing the rear seat cushion to see if there is anything loose underneath that.

CAR STORAGE

(Continued from Page 34)

First of all, the car should be stored in a dry building, and so placed that it is not exposed to the direct rays of the sun. Sunlight on tires will cause the rubber to deteriorate, and sunlight on the upholstery will cause it to fade. If it is not possible to exclude the sunshine by covering the windows of the building, then the tires should be covered with paper. The car windows and windshield should be covered with paper, also, to prevent the sun from striking the upholstery.

The crankcase oil should be drained, the engine flushed and refilled with oil having additives to prevent rust. Run the engine for a few minutes to insure that all working parts have acquired a coating of this oil.

Drain the cooling system, refill with water containing a rust inhibitor, and run the engine until circulation of the solution is assured, and then drain.

The gas tank, gas line, fuel pump and carburetor should be drained. The carburetor and fuel pump should be flushed with mineral spirits or naphtha to remove all traces of gasoline and thus prevent gum deposits from forming in the jets and valves.

Two ounces of oil should be inserted through each spark plug hole and the engine turned over several times by hand to insure that cylinder walls and piston rings acquire a protective oil film. This is to prevent rings from sticking in the piston grooves or pistons seizing to the cylinder walls. Spark plugs should be replaced to prevent the entrance of dust.

The battery should be removed from the car (not merely disconnected) and stored where it can be given a freshener charge every 30 days to prevent sulphation.

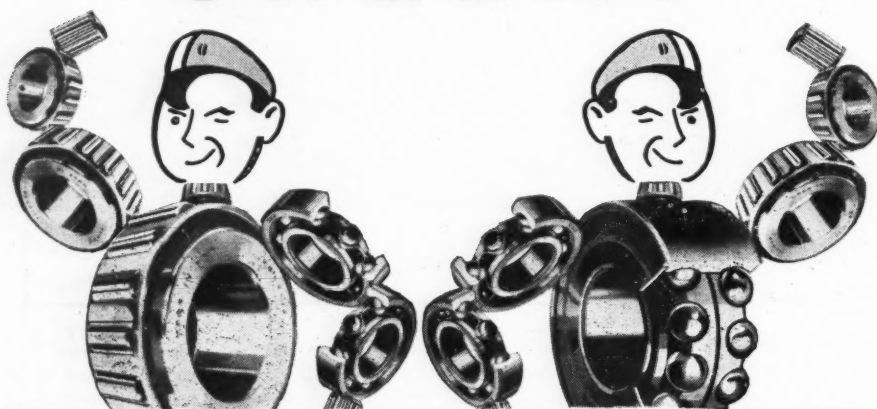
The under side of the chassis should be oil-sprayed to prevent rust and to insure that brake cables or pull rod clevises are kept free. The exterior of the car should be washed and polished to protect the finish, and all chrome-plated trim parts coated with wax to seal the surface against moisture.

Moth-proofing of the interior of the car is necessary to protect the upholstery. This can be done by using camphor, naphthalene or some of the special sprays that are available, and keeping the car doors tightly closed. It may be necessary to repeat the moth-proofing treatment every 60 days or so.

Finally, place the car upon horses or blocks to take the weight of the car off the tires.

By following these instructions the car will be kept in good condition so that when it is possible to put it back into service, repairs or parts replacements will not be necessary.

URGENT



WORN BALL BEARINGS ARE NEEDED

Every sound, worn bearing should be saved, not "junked." They are the raw material from which re-ground bearings are made and re-ground bearings can take the place of new bearings for civilian bearing replacements.

SERVICE MEN, don't throw away good worn bearings. Do all you can to make every bearing last just as long as possible. If, however, a ball bearing must be replaced, save the worn one for regrinding. Ahlberg wholesalers will give you full details about bearing care, bearing replacement and will act as collection center for all makes of bearings suitable for reconditioning.

Save worn ball bearings — THAT SAVES STEEL.

AHLBERG
BEARING COMPANY
Manufacturers of (CJB) Master Ball Bearings
★ 3028 WEST 47th STREET • CHICAGO, ILL. ★
Out West use PRECISION BEARINGS, INC., Los Angeles

WHISPERS

(Continued from Page 39)

To supply parts to keep the necessary vehicles going, a new WPB order is contemplated which would permit parts makers to make 125 per cent of 1941 production. Parts makers would be given an A-1 priority to enable them actually to get the material to carry out the intent of the order. In order to stave off rationing of parts, the plan is to make it mandatory for an old part to be turned in before a new one can be purchased. This would prevent hoarding and unnecessary consumption of parts that are still serviceable. However, the boys interested in rationing are doing some thinking about the complexity of parts rationing so they will be ready just in case.

Plant Enlarged

The Ergolyte Manufacturing Co., makers of Ergolyte A. C. electric arc welders, has just announced the opening of a new plant at 3627-29-31 N. Lawrence St., Philadelphia. The new factory is more than twice the size of the firm's previous Philadelphia plant.

CLEAN PARTS

(Continued from Page 30)

The inspection given the part was adequate—as far as it went. But, when a part is even only partially covered with muck or grease, the best inspection often fails to reveal defects that later cause trouble. Add to this the usual extra time wasted in handling and adjusting dirty, greasy parts and it can be readily seen why it pays to “clean ‘em up first” for faster, better repairs.

The small expenditure usually required to make an adequate parts-cleaning installation is more than offset by the savings in time and money you effect and in the improved results you obtain on repair or overhaul jobs.

If your shop turns out only an average amount of repair work, then an ordinary metal oil drum will act nicely as a cleaning tank. Cut away or remove the top section and set it on a base made of 10 gage sheet iron as shown in the diagram. If you have steam available, a closed steam coil is, in most instances, the most economical method of heating a cleaning tank. However, if it is not, then a ring gas burner similar to that shown in Fig. A will perform with equal efficiency.

Secure the gas burner inside the tank base. A copper coil may be added to speed up heating. While on the subject of temperature, it may be well to emphasize its importance. Heavy deposits of grease, oil and muck may sometimes be only loosened after immersion in an alkaline cleaning solution. Agitation is then necessary to complete the job. A cleaning solution kept at 212 degrees Fahr. fills this need. So be sure to keep the solution at a good, rolling boil. A light brushing also may be required. Experience shows, however, that the necessity for manually brushing parts tends substantially to decrease as the effectiveness of the cleaning material chosen increases.

Place a drain at the bottom of the tank. The interval between draining period will vary according to the volume of repair work you must handle, but occasionally it will be necessary to dump the tank, remove the muck collected on the bottom, and recharge with cleaning solution.

Small parts are best handled in a basket. Some iron strap, a 7-foot rod, and wire mesh are all that is needed. Dimensions are shown in Fig. B. The mesh should be as coarse as the smallest parts to be cleaned permits. Larger, bulkier parts may be immersed directly in the tank.

Rinsing facilities are important. Loosened grease and muck deposits may be knocked off large parts with a pressure hose rinse. Smaller parts may be rinsed while still in the basket in a separate tank. Again, an

ordinary oil drum will suffice. Equip it, too, with a drain since it is essential that the rinse water be frequently renewed to keep it clean and oil-free. In view of the unusual free-rinsing properties of the alkaline-type cleaning materials available today, very little effort will be required to produce a clean, grease-free part after it has been immersed for the proper time in a boiling solution.

A word concerning selection of a suitable degreasing material is appropriate. Certain metals, aluminum, for example, are particularly sensitive to the action of strong alkaline solutions. Aluminum pistons, cylinder

heads, etc., therefore, ordinarily should not be degreased in the same tank with iron and steel parts. However, when the volume of work does not warrant two different cleaning tanks, the best rule to follow is to choose a degreasing material which will not harm the most sensitive metal to be cleaned. Frequently, a slight etching of aluminum surfaces is not an important consideration. Then, in the interests of faster grease-removing action, it will be permissible to use a material slightly stronger than one which was designed to clean aluminum without any significant loss of metal.



For 32 years, McQuay-Norris has been manufacturing precision parts for motors used in passenger cars, trucks and tractors. In addition to making automotive replacement parts, we are now direct contractors to the Army and Navy and subcontractors on critical precision parts for aircraft, tanks, scout cars and trucks:

McQUAY-NORRIS MANUFACTURING CO.

Let's keep cars, trucks and tractors rolling!

"STOP WASTE with The Ring Leader!"

LEGALLY SPEAKING

A lawyer's interpretation of Federal and local court decisions of interest to repairmen, presented each month

By C. R. ROSENBERG, JR.

Who's Boss?

Where a repair business is organized as a partnership, practical business efficiency may make it necessary that one of the partners be boss. The legal rule is that a majority of the partners control in the ordinary operation of the business.

A Texas court recently pointed the way to one-man efficiency in the running of a partnership business.

"As a general rule," says the court, "partnerships are legally under the control of the majority of the partners; but, as between themselves, the members of a partnership may vest the sole control in one of the partners to the exclusion of all the others."

If no such arrangement is made, the partnership business must be operated on the basis of "majority rule". (*Texas vs. Bass*, 151 *Southwestern Reporter*, second series, 567).

Adequate Bookkeeping

A repairman's legal right to recover the money due him on open account may depend largely on the carefulness or carelessness of his bookkeeping. Discussing the requirements of a suit on a book account a California court recently said:

"A book account may be deemed to furnish the foundation for a suit only when it contains a statement of the debits and credits of the transac-

tions involved completely enough to supply evidence from which it can be reasonably determined what amount is due the claimant.

"The mere entry in a cash book or ledger of the amounts and dates when a debtor makes certain payments, without further information regarding the transaction, does not constitute a book account. The term 'account' clearly requires the recording of sufficient information regarding the transactions involved in the suit, from which the debits and credits of the respective parties may be determined, so as to permit the striking of a balance to ascertain what balance, if any, is due to the claimant."

While the court was interpreting a California statute on the subject, its view of the legal aspects of an adequate book account is sound guidance to repairmen everywhere. (*Tillson vs. Peters*, 107 *Pacific Reporter*, second series, 434.)

Injury in Rented Building

If a repairman is doing business in a rented building, and a third person is hurt by reason of some defect in or on the rented premises or its approaches, who is legally liable for the injuries, the tenant or the owner of the building?

In New Jersey recently, the operator of a business in a rented building had heavy merchandise dragged

McQUAY-NORRIS

ALTINIZED

Engineered Set

PISTON RINGS

*Care for your car
...for your country*



McQUAY N



or rolled across the front pavement and then sent into the cellar on wooden skids. This practice eventually caused a break in the pavement, and a passer-by fell and was hurt by reason of this break. The passer-by, a woman, sued the owner of the building for her injuries.

"If the defective sidewalk had been caused by the owner," said the Supreme Court of New Jersey, "or resulted because it had been subject to an improper use with the knowledge and for the benefit of the landlord, a duty would be imposed upon him to see that such condition, dangerous to pedestrians lawfully using the sidewalk, was not continued. But there is nothing to show that the owner caused the condition complained of or that the improper use of the sidewalk was done with his knowledge and for his benefit."

While the court thus relieved the landlord of liability in the circumstances, it made no mention of the tenant because he was not a party to the case. However, there would be nothing to prevent the injured woman from suing the tenant business man whose improper use of the sidewalk resulted in the break which caused her injuries. (*Lindner vs. Michel*, 16 *Atlantic Reporter*, second series, 340.)

New Partner

An incoming partner's interest in the partnership business may not always be as desirable as he would like.

Discussing this question in a case before it, a Texas court recently pointed out:

"While the record shows that the new partnership did not assume the existing liabilities against the part-

nership, in the absence of an agreement to do so, the law is well settled that an incoming partner takes only a partnership interest in the partnership property subject to trusts, equities, charges and liens existing against it."

And, ordinarily, a partner is personally responsible for all the debts of the partnership business! (*Penrod vs. Silvertooth*, 144 *Southwestern Reporter*, second series, 335.)

Fraudulent Contract

Has a repairman no relief from the burdens of a written contract which he was induced to sign through fraud?

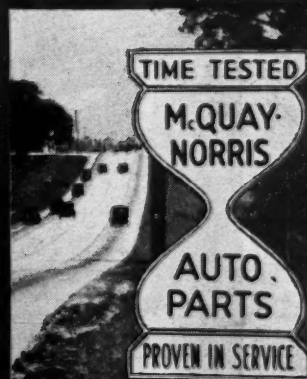
The law recognizes such a thing as "fraud in the procurement" of a contract and will set the contract aside if the fraud is satisfactorily proved. Just how "satisfactory" the proof must be in such a case was recently indicated by the Supreme Court of Pennsylvania.

"The evidence of fraud," said the court, "must be clear, precise and indubitable. This means that the witnesses must be found to be credible, that the facts to which they testify are distinctly remembered and the details thereof narrated exactly and in due order, and that their testimony is so clear, direct and weighty and convincing as to enable the jury to come to a clear conviction, without hesitancy, of the truth of the precise facts in issue."

Which suggests that the repairman who tries to prove that his signature to a document was procured by fraud, will have a hard row to hoe if he relies solely on his own testimony. (*Aliquippa National Bank vs. Harvey*, 16 *Atlantic Reporter*, second series, 409.)

HERE'S HOW!

There's no excuse for sloppy ring jobs that waste time, parts and labor. Use only McQuay-Norris Altinized Engineered Set Piston Rings and get the job done right the first time! That's what smart repairmen and fleet owners are doing everywhere. These famous rings are specifically engineered for all cars and trucks. Start *stopping waste* today and save valuable time, parts and labor with Engineered Sets!



McQUAY-NORRIS MANUFACTURING CO.
Piston Ring Headquarters

What Will We Use?

(Continued from Page 25)

mobile is operated on gasoline fuel, might more than offset the advantage of keeping the vehicle on the road, even considering the low cost of the fuel.

First of all, the engine is only about 60 per cent efficient, speed, power and acceleration considered. While some outfits are designed so that the engine can be started on gasoline and then switched over to the producer gas, those which oper-

ate entirely on producer gas are slow to start. Although it is sometimes possible to start a vehicle two to four minutes after the fire is lit, full power is not developed until about 20 minutes after igniting the fuel. If the vehicle is stopped for 10 or 15 minutes, the engine should be left running; otherwise the gas production will stop, and a delay will be necessary in starting up again until sufficient gas has been produced.

The gas filters have to be cleaned daily; the producer has to be emptied of ashes at least once a day; mileage is about two pounds of fuel to the



"Our brake business has increased 400 per cent since Pete got that new uniform."

HANSEN *Blo-Vac* AIR CLEANER



**LIGHT • POWERFUL
FAST and HUSKY!**

Hansen Blo-Vac air cleaner, has no working parts, is extremely light and portable and is air operated. It is a two in one unit... a blower and a vacuum cleaner, by merely turning knurled nut it can be instantly changed to operate either way. Hansen Blo-Vac has a very high vacuum, doing a thorough job of cleaning upholstered automobile seats, ceilings, floor mats and all interiors. Ideal as a blow gun for cleaning engines, parts, etc.

There are no triggers or buttons to hold while cleaning, the unique Hansen needle valve has absolute control of the air volume at all times with no wastage of air. Hansen's nozzles and dust bag are quickly and easily attached and detached as they are connected by means of a clamp.

Hansen MFG. CO.
INDUSTRIAL *Air Line* EQUIPMENT
1786 EAST 27TH STREET • • • CLEVELAND, OHIO

mile. Added to these disadvantages is the fact that the producer outfit increases the weight of the vehicle or affects its maneuverability if drawn on a trailer attached to the vehicle.

Engine wear is another factor. This depends entirely upon the efficiency of the filters, and, if they are of ample capacity and are kept clean, wear is not a particular problem directly related to the use of producer gas. In many cases, however, filters are not of sufficient capacity, or are not cleaned frequently enough. This permits some of the tarry substances and other foreign particles to be drawn into the engine, causing an excessive rate of wear, which on the average is about twice that of engines operated on gasoline fuel.

Operating Record Book Offered Truck Owners

Recognizing the need, existing especially during these times, for a simple, flexible and complete truck-operating record, The Toledo Steel Products Co. has prepared such a book for distribution to truck and fleet owners, through its local distributors.

The book is prepared so that operating data for one entire year may be recorded. It has daily and monthly entries for trips, stops, units and weights, idle and lunch time, daily mileage, gas, oil and grease, trip time, tire repair and accident expenses, depreciation, interest on investment, insurance, license, taxes, storage, overhead and summaries of operating data.

Truck operators desiring copies of the record should get in touch with their local Toledo distributor, or write direct to The Toledo Steel Products Co., Toledo, Ohio.

EVERYBODY'S TELLING YOU

Your Lubrication and Service Sales Must Increase during 1942

WE'LL HELP YOU DO IT!

How to Take Jobs You Can't Do

ASSUME COMPLETE RESPONSIBILITY FOR YOUR CUSTOMERS' CARS

AFFILIATION with reliable shops specializing in service you're not equipped to render gives you complete customer control and extra profits.

When your men send a customer to other people for work which you are not equipped to do, you break the habit you're trying to cultivate—the habit of having them come to you.

This phase of car dealer operation has become more vitally important than ever before. Have you all the facts?

FACTS ON MODERN SERVICE METHODS

1 FREE TRAINING COURSE— Everyone in your organization is trained in Modern Service Methods. This sales-coaching program is conducted by trained Socony-Vacuum specialists right at your shop.

2 YOUR MARKET CAREFULLY SURVEYED to calculate the future growth of your business... to give you a sound basis on which to plan improvements.

3 YOUR PRESENT LAYOUT IS STUDIED— We suggest possible improvements in equipment and in the arrangement of your establishment. We recommend the type and size lubricatorium your business needs for top efficiency.

4 SALES PROMOTION— We offer you hard-hitting sales promotion pieces... to bring new customers into your place.

SOCONY-VACUUM OIL COMPANY, Incorporated, and Affiliates—
Magnolia Petroleum Company, General Petroleum Corporation of California.



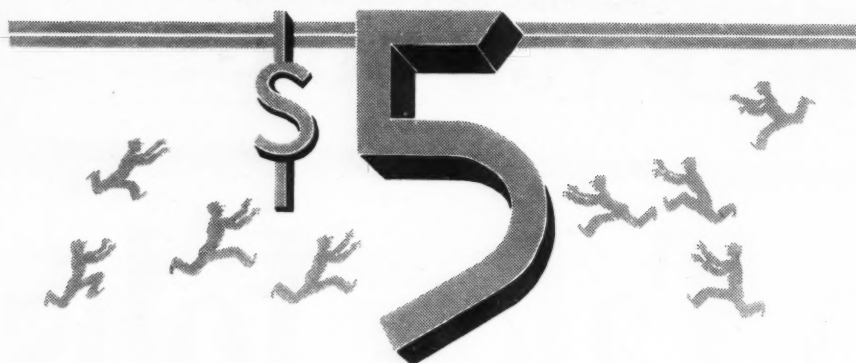
WRITE TO CAR DEALER DIVISION—SOCONY-VACUUM OIL CO., INC., 26 BROADWAY, N. Y. C., FOR FACTS ON

SOCONY-VACUUM'S

MODERN SERVICE METHODS



★ SHOP KINKS ★



Here's your chance to pick up a little cigaret money. We'll pay five bucks (\$5.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and quicker than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest. Incidentally we won't accept any that have previously appeared in any other automotive publication. Here are some that were accepted this month

DRILLING OIL HOLES IN PISTONS

In drilling oil holes in pistons, you may have had the experience of hitting the piston with the chuck, damaging the piston ring grooves. To prevent this take a piece of 1 in. rubber or leather, drill a hole in the center, then slip the drill through the hole and it will act as a cushion or bumper between the chuck on the drill and the piston. If the drill slips, it will not contact the piston to cause any damages.—*Preston R. Coleman, 128 Wayne Ave, Norristown, Pa.*

BRAKE SYSTEM FILLER

As master cylinders are often in hard-to-get-at places, considerable brake fluid is often wasted when attempting to fill them. This loss can be eliminated and much time can be saved by construction of a simple filler. This device is made by soldering a short length of flexible tubing to funnel. A brake hose would be just the thing.—*Gene Shermeister, Sheboygan, Wis.*

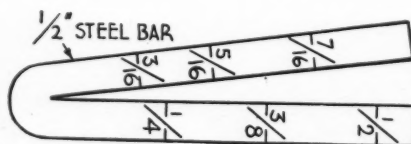
FRONT DOORS

When you are making repairs to a transmission or clutch in a car it is often difficult to keep the doors open to give easy access to the unit being

repaired. A device to hold the door open can be made from two pieces of $\frac{1}{8}$ in. rod, one about 28 in. long and the other about 3 in. long. Fasten these two pieces of rods together with a light 24 in. door spring, then bend the opposite ends in hook fashion so that they can be attached to the door hardware on one side and to any convenient place on the other end to hold the door open.—*E. J. Hink, 418 Jones St., Sioux City, Iowa.*

BOLT SORTER

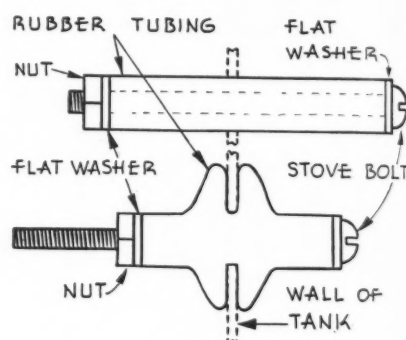
A fill-in job for the apprentice mechanic is sorting bolts, and the work can be speeded by means of an easily built gage. The gage consists essentially of a piece of $\frac{1}{2}$ in. steel bar, bent into a V shape. Each leg of the V should be approximately 3 in. long. Place a $\frac{1}{2}$ in. bolt in the V and mark its position on the V. Repeat this with each different size bolt to be



sorted and the bolt gage is completed. By means of this gage, the most inexperienced apprentice can quickly sort bolts, which are then put in labeled and conveniently placed boxes.—*Geo. Pennington, Wanneta, Neb.*

FUEL-TANK REPAIR

A temporary repair can be made in a punctured gas tank by means of a stove bolt and a short piece of rubber tubing. The procedure is to drive a tapered punch into the hole until it is larger than the nut on stove bolt. Then assemble the stove bolt, washers, nut and rubber tubing as shown in the illustration. Insert the nut end of the assembly into the hole in the tank and tighten the bolt with a screw driver. This will cause the tubing to be crushed against the tank and seal the hole. Action of the fuel on the rubber will cause the rubber to expand and increase the sealing effect. The repair is not permanent because of the action of the fuel on the rubber.—*Emil J. Novak, J & R Service Garage, Omaha, Neb.*



REMOVING AXLE-SHAFT OIL-SEAL WASHER

It is very difficult to remove the axle driveshaft oil washer on Chrysler cars unless the proper tool is used.

Here is a suggestion to simplify its removal after removing the rear wheel and axle shaft. Take the shaft and, with the axle nut tightened on the shaft, insert the shaft in the axle housing with the nut end toward the differential, forcing it by the oil-seal washer.

Then, with the shaft in this position, it is possible to remove the seal washer by hitting the inner side of the washer with the axle-shaft nut.—*Ted Johnston, 834 Grant Ave., Santa Monica, Cal.*

REPLACING GAS-GAGE TANK UNIT

To save time and labor in removing a gas-gage tank unit, cut a hole through the floor covering just over the gas gage large enough for you to remove the unit. This will eliminate the necessity of draining, removing and installing the gas tank. To make a neat job after the cut, the hole can be covered with a piece of metal cut to size and held in place by small screws.—*Arthur Heins, Edwards Motor Co., 3600 W. Wisconsin Ave., Milwaukee, Wis.*

WE MUST HAVE CARS

(Continued from Page 27)

Carefree are the shops that specify Pedrick Engineered Sets for all engine reconditioning . . . whether in cars, trucks, buses, or tractors.

Broad Smiles follow the excellent, all-around performance these sets assure because each is tops in quality, accuracy, and design. Pedrick engineers combine the correct types for each piston into a championship team which delivers *both* oil and blow-by control, even in badly tapered or out-of-round cylinders . . . to give maximum power and longer engine life.

Happy are those who enjoy the full benefit of Pedrick's *liberal ring-and-labor guarantee*. And more efficient are the shops using the latest Service Manual now being distributed by Pedrick jobbers.

Step right up and ask to see *all* the advantages of Pedrick Engineered Sets. Order a set for your next job. Question your jobber or write us.

PISTON RINGS

WILKENING MANUFACTURING COMPANY,
PHILADELPHIA. In Canada: Wilkening Manufacturing Company (Canada) Ltd., Toronto.

reason that the predominant use of rural and suburban passenger cars is in local transportation, a field not served by railroads. Bus lines are likewise unequal to the task that would be thrust upon them by elimination of the private car, because buses already are carrying capacity loads and routes must be confined in most cases to the main or improved sections of our highway system, which sections amount to about 5 per cent of the total.

Even persons living in cities having mass-transportation systems are not independent of their cars, the study reveals. This varies with the size of the city, 71 to 92 per cent of persons entering and leaving the central districts by car in cities with populations less than 100,000 and 60 to 70 per cent using automobiles in cities between 100,000 and 500,000. In cities of 500,000 and more, 14 to 41 per cent depend on their cars.

(This may not be an absolutely true general picture, as cities that have enjoyed the greatest growth since the automobile ownership became general often do not provide mass-transportation facilities to compare with those in cities that grew up when street cars were almost indispensable. Cases in point are Washington, D. C., and Detroit, Mich., where laying up private cars would strike local travel a paralyzing blow. Philadelphia, Pa., and Baltimore, Md., on the other hand, have extensive transit systems.)

Still mass-transportation systems are already staggering under the exceptional loads imposed on them by the war, and the greatest future demand for transportation will come in localities where street-car lines are least adequate or do not exist. In 1144 cities that have mass-transportation facilities, 872 are served only by buses, and 22,000,000 persons op-

erating 5,000,000 private automobiles live in those cities.

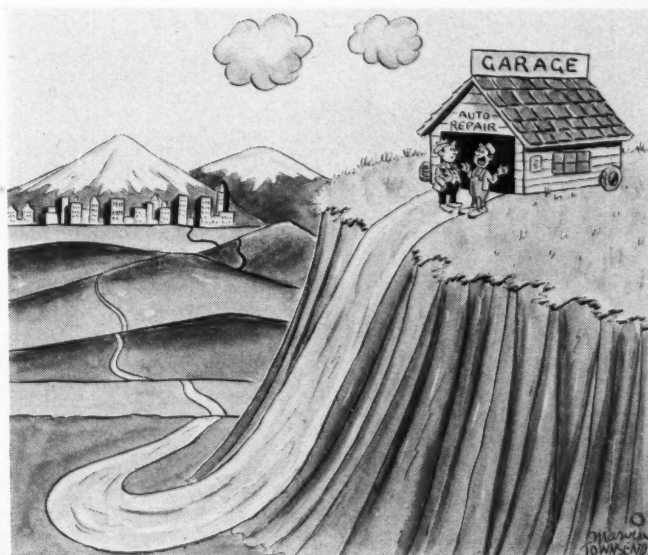
The increase in street-car travel has been due in part to the increase in the number of war workers, when plants are located near transportation lines. In many cases, however, new plants have been constructed far from transportation, as was shown in the article, "He Too, Helps Win the War," in the April *MOTOR AGE*. The Brookings Institution study points to many of the same instances of plants so situated that workers can reach them only by private automobile.

In general, the Brookings study supports the stand taken by *MOTOR AGE* months ago when it asserted that private automobiles must be kept in operation to avoid a breakdown of our domestic transportation. The study concludes, as noted before, that 20,000,000 private cars must be kept running. However, it seems to lay too much stress on the possibility that we may run short of passenger cars for essential use.

Partly responsible for this view are the figures given for used-car stocks. The study places stocks at 290,000 units. The National Automobile Dealers Association, on the other hand, reports that dealers have more than 1,000,000 cars on hand. The latter seems the more probable figure. If accurate, it means that war workers can buy more than 1,000,000 cars in operating condition before it is necessary for the Government to seize the cars of others to meet the workers' needs. In fact, the survey points out that legal obstacles stand in the way of the Government's pursuing any such course.

If any additional proof was needed by men in the automobile industry that the continued operation of private passenger cars is essential to the war effort, the Brookings Institution study supplies it.

"I figure
by the time
they get
up here
they'll need
a complete
motor
overhaul!"



DETROIT LETTER

(Continued from Page 41)

Russian front that other Chrysler medium tanks, painted black instead of the conventional olive drab, were preparing to go into action in that sector against the Nazi panzers. A year previously Stowe had seen the first of these tanks coming off the production line at the Chrysler Tank Arsenal in Detroit.

The bouncing jeeps, quarter-ton reconnaissance cars, are in use wherever U. S. expeditionary forces have

been sent, whether it be over the rocky roads of Iceland, the green fields of Ireland or the desert brush of Australia. Gen. "Uncle Joe" Stilwell used jeeps over the tortuous trails and through the jungles of Burma and India to enable him and his staff to escape to Calcutta after the Chinese forces he was commanding had been cut off by superior Japanese troops. Ford and Willys are turning out these tiny combat cars which are playing such an important role in World War II.

Aircraft and tank machine guns, such as are being manufactured by Oldsmobile, International Harvester

and AC Spark Plug, are helping carry lead messages to the soldiers of Hitler and Hirohito. The bigger anti-aircraft guns produced by Chrysler, Pontiac and Hudson are protecting naval vessels against enemy attack and other models, mounted on mobile carriages, are used by U. S. expeditionary forces abroad to guard against hostile aircraft. Workers at the U. S. Naval Ordnance plant operated by Hudson have formed a Gun-of-the-Month Club to which every member donates \$1 per month for the purchase of a 20-mm. anti-aircraft gun for presentation to the U. S. Navy. The first of these gift guns, costing \$5,000 was installed on the U. S. S. Shaw, one of the destroyers which was damaged at Pearl Harbor and then towed to California for repairs.

U. S. Army bombers, converted for carrying torpedoes, played an important part in sinking Japanese warships and routing the enemy fleet in the battle of Midway Island. Some of these planes were powered by Pratt & Whitney 2000-hp. engines made by Ford in its new aircraft engine plant. Allison engines have powered the P-38 and P-39 fighter planes which have harassed Japanese bombers attempting to raid New Guinea and northern Australian bases of the United Nations.

Packard-built Rolls-Royce Merlin engines are going into the new Lancaster bomber, a British plane shrouded in secrecy, which carried many of the explosives that were dumped on Cologne and Essen. Merlins made by Packard also are installed in British Spitfire and Hurricane fighters. Packard engineers and employees are especially proud of the performance of the Packard marine engines which sent the swift patrol torpedo boats of the U. S. Navy skimming through the Pacific waters around the Philippines, enabling Gen. Douglas MacArthur to escape to Australia and also sinking Japanese transports and destroyers. These engines also are doing duty in the war-crowded Mediterranean.

On the home front, the Automotive Council for War Production is conducting an intensive drive for salvage scrap metals to keep the blast furnaces turning out steel for the war program. Each automobile company is looking over its stocks of obsolete tools, dies, machinery, equipment and buildings and then deciding which can be scrapped without hampering the war effort. However, the companies have not been asked to scrap any 1942 model dies nor any that are needed to produce replacement parts that may be necessary to keep older model vehicles in operation. Previously, a War Production Board salvage official had stated that the automobile industry would be asked to scrap all available dies, tools and fixtures not in use on war work. Later he retracted this

(Continued on Page 62)



WORKING UNDER PRESSURE

Every day—almost every hour—brings new problems in the war production program. More and more goods must be turned out—often with less material to work with. Almost every manufacturer has the job of coming through on time so that other war industries are not thrown off schedule.

That takes plenty of sweat in the shop and constant good planning by the management. Ingenuity and resourcefulness are at a premium as never before—for America is again showing its native genius to solve the impossible problems almost as fast as they arise. This is the way the war will be won, and even though it entails temporary sacrifices, it is a small price to pay for Victory.

From Factory Bulletin Board of the

CONTINENTAL RUBBER WORKS

MAKERS OF THE VITALIC LINE SINCE 1903

ERIE, PA., U.S.A.





HOW MANY OF THESE

*can you be sure of getting
when you need them?*

GOOD OIL *will make them last longer*

CAR OWNERS used to worry about traffic laws. Now they worry more about the law of supply and demand. War priorities and allocations have disrupted the whole replacement picture . . . *conservation* is all-important.

Because oil is such a vital factor in conserving engines and engine parts, you naturally want to give your customers the benefit of the best oil to be had.

And you can't ask for better proof of oil performance than this:—*Pan American Clippers* have used *Wolf's Head Oil* for over 13 years, for more than 900 million passenger-miles.

Follow long-range aviation experience. Recommend and sell *Wolf's Head*—be certain of giving your customers the protection for which they depend on you. *Wolf's Head Oil Refining Co.*, Oil City, Pa. . . . New York, N. Y.

Be Ahead with

WOLF'S HEAD MOTOR OIL AND LUBES

100% PENNSYLVANIA  P.G.C.O.A. Permit No. 19



35¢
a quart

DETROIT LETTER

(Continued from Page 60)

statement after it had been pointed out that such a move might mean six months of post-war unemployment for automotive workers.

Whereas it may take three to nine months to resume automobile production after the war, due to disruption of assembly lines and removal of automotive machinery, this might be extended to possibly a year if 1942 model dies were scrapped and an entire new model had to be designed

and tooled. This would mean further idleness for thousands of automobile production workers.

In an effort to help alleviate the rubber shortage and provide essential civilian transportation, a joint tire committee of the automotive and tire industries has been formed under the auspices of the Society of Automotive Engineers. This committee has pooled the research studies of the tire, automobile, oil and chemical industries, which involves years of technical investigation by industrial experts. All this information has been made available to the government authorities in Washington.

The committee hopes to provide an "interim" tire from materials remaining after all military needs have been filled. It is hoped to develop some non-critical material that will be suitable for retreading the worn casings of present tires. Such a tire may have a short life and it may be necessary to drive at low speeds, but it would help keep millions of essential cars of war workers and others on the road. Years of experimenting by the automobile and tire companies seem to show that the development of a non-rubber tire is not a solution to the problem. Wooden tires and steel spring tires have not proved satisfactory in tests.

The tire committee is headed by J. C. Zeder, chief engineer of Chrysler Corp. It includes C. F. Kettering, vice-president in charge of research for General Motors, and Fred M. Zeder, vice-president of Chrysler, both members of the National Inventors' Council, as well as representatives of Ford, Chevrolet, Firestone, Goodrich, Goodyear and U. S. Rubber. Other companies cooperating in the effort are General Tire, Dunlop, Seiberling, Monsanto Chemical, Dow Chemical, Standard Oil of New Jersey, Hercules Powder and du Pont.

GET FULL MILEAGE OUT OF GASOLINE

Check the Wire
on every job—

Wiry Joe
WIRE AND CABLE
PAWTUCKET · RHODE ISLAND



LOOK! I'VE GOT TO MAKE
MY GAS GO FURTHER. WHAT
CAN YOU DO ABOUT IT?

WHY-ER... WHY-ER

THAT'S IT, BOSS! WIRE!
TELL HIM HOW FAULTY
IGNITION AND
DEFECTIVE WIRING
WASTES AS MUCH
AS 20% OF
HIS GASOLINE.

"Stop Waste"—the first principle of a sound war economy

Cars that have faulty ignition, defective wire and cable waste gasoline vital to victory. Some cars waste from 12 to 20% of all gasoline put in their tanks!

Wiry Joe says, "Stop this waste. Check the ignition and the wire on every job that comes into the shop. Make necessary repairs and replacements. Top-efficiency means low gasoline consumption."

But make replacements cautiously! Don't waste copper wire—copper is a war material, too. If a wire or cable has merely corroded at the terminals, and can be cleaned, shortened or repaired—do it. If one or two wires go bad, replace the bad wires only. Keep wires clean. Wipe them off occasionally. Don't let oil and dirt cause unnecessary deterioration of insulation. Remember that's made of rubber.

Stop Waste . . . ✓ Check the wire on every job!

242 View Brake Film

"Keep 'Em Holding," the new Thermoid movie on brakes, was recently featured at a Dealer Meeting sponsored jointly by Phelps-Roberts Corp. and Southern Wholesalers, Inc., Thermoid Distributors in Washington, D. C. The meeting was held at the Mayflower Hotel the latter part of April, and was attended by 242 dealers and brake-service men.

Following the meeting both H. E. Hyde, southern wholesalers sales manager, and Robert E. Phelps, treasurer of Phelps-Roberts, described it as highly successful and praised the film as an outstanding contribution in helping brake mechanics do a better job.

Thermoid's new Brake Service Reference Book, containing all the material featured in "Keep 'Em Holding" plus correct adjustment procedures on many other types of brakes, is distributed to everyone attending "Keep 'Em Holding" Meetings.

'E' for Walker

Formal notification has been received by the Walker Manufacturing Co. from Frank Knox, Secretary of the Navy, that their Walker-Michigan Co. Division at Jackson, Mich., has been awarded the Navy "E" for excellence in war production.

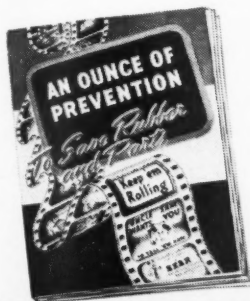
This division was given its first Navy contract in August, 1941, and earned its official recognition from the Navy by stepping up production 100 per cent over original expectations.

Appoint Yourself TIRE WARDEN No. 1

Your country's war effort and your business rides on rubber. The car that has no rubber is valueless to the war effort; neither will it roll into your shop, Mr. Repairman!

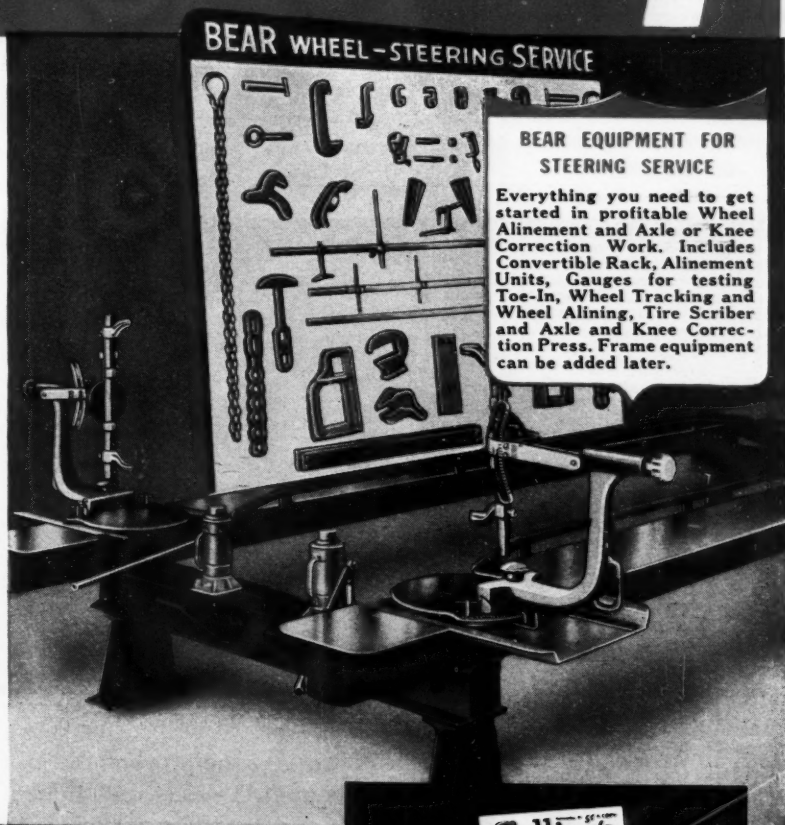
PROPER INFLATION NOT ENOUGH

Your customers are depending upon YOU to see that their tires last their longest! IT IS YOUR RESPONSIBILITY TO IMPRESS UPON THEM THE DIRE NECESSITY FOR IMMEDIATE TIRE CARE. SHOW THEM WHY proper inflation and rotation, while important, are of little value if wheels are out of alignment and unbalanced. Bear's advertising is telling this story to your customers in TIME and COLLIER'S magazines.



FREE MANUAL TELLS WHAT TO DO IN PICTURES

Over 100 Tell-How pictures from the new Bear Talkie Film are brought to you in this free manual. No mechanic, regardless of what equipment he uses, should be without a copy of this informative manual of latest alignment methods and practice. Send for your free copy today. No obligation. Address Bear Mfg. Co., Rock Island, Ill.



BEAR EQUIPMENT FOR STEERING SERVICE

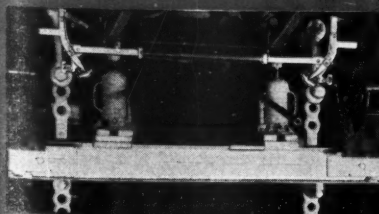
Everything you need to get started in profitable Wheel Alignment and Axle or Knee Correction Work. Includes Convertible Rack, Alignment Units, Gauges for testing Toe-In, Wheel Tracking and Wheel Alining, Tire Scriber and Axle and Knee Correction Press. Frame equipment can be added later.

With this Complete Bear Equipment YOU CAN DO THE JOB RIGHT, FROM START TO FINISH

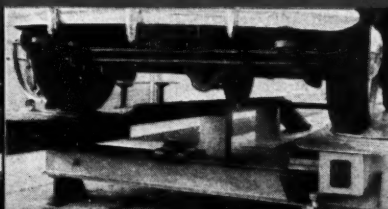


Provide faster and more accurate testing of center, camber, toe-in, king pin angle and toe-out on curves, with these Bear No. 119 Checking Units.

This Bear Wheel Tracking and Frame Gauge is the only gauge on the market for squaring up car all around. Reveals swayed and diamond frames. 2-point contact feature assures complete accuracy.



Extra precision is assured by using Bear Wheel Aliner to check operations as pressure is applied with Bear Axle Press in making camber corrections.



It is a simple job to straighten a front axle bowed in the center, by the use of this hook-up of the Bear Axle Press No. 22—an important part of the "100-20" unit.



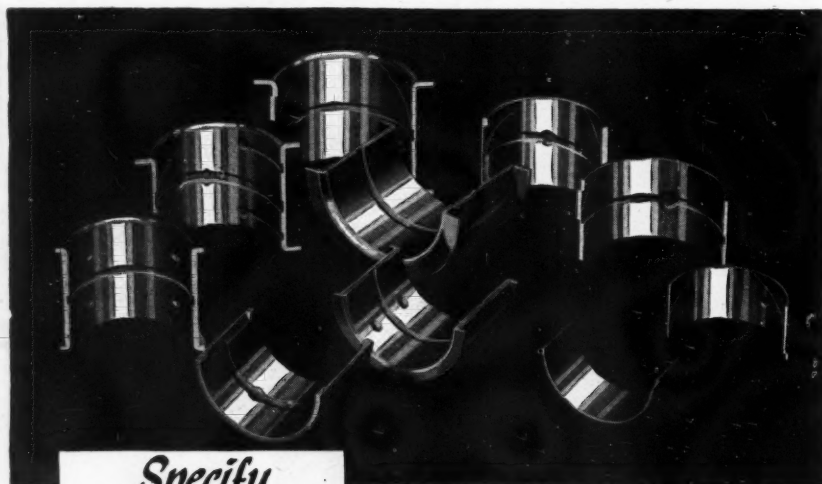
BEAR NATIONAL ADVERTISING

is telling car owners to look for the Bear Sign. Be sure your sign is out in front, so that car owners will know you are offering this vital rubber-saving and car-saving service.

BEAR

GREATEST NAME IN SAFETY TEST AND STEERING SERVICE

What was probably the largest "spring" in the world was built by the Tuthill Spring Co. for display in Chicago's Flag Day parade, June 14. The "spring" was made of plywood, was 24 ft. long and 44 in. wide. It had nine leaves, each 5 in. thick, but the whole unit weighed only 300 lbs. If steel, it would have weighed 112,500 lbs.



Specify
**JOHNSON
BRONZE**
*for Quality
Bearings*

*Write for
FREE
Catalogue*

In times like the present, the job of keeping the cars and trucks of America operating at full efficiency is a serious obligation. This is not the time to experiment. Only replacement parts of consistent quality will meet the unusual demands of service now being imposed.

It is an easy matter to be sure of your bearings or bushings. Specify JOHNSON BRONZE. For the past thirty years we have been a preferred source of supply on original equipment. All Johnson replacement parts receive the same exacting treatment demanded by car and truck builders. There are no second or third grades of Johnson merchandise. The next time you purchase bearings...be safe...specify JOHNSON BRONZE.



JOHNSON BRONZE
Sleeve BEARING HEADQUARTERS
455 S. MILL STREET • NEW CASTLE, PA.

WOMEN'S SERVICE

(Continued from Page 31)

and so never had learned really to love and enjoy it. Most of the real driving—on trips, for instance—was always left to the men.

Today these women are learning how to drive. They're learning to love driving and to love their cars. They are gaining a certain amount of respect and understanding as to what is reasonable to expect from an engine, and why. After the war, the women are no longer going to be content with a car that just "runs"—they'll be excellent prospects for motor service.

Anyone inclined to doubt the value and effect of this training need only look back to World War I. Previous to 1917, women had worked both in offices and stores, and yet it wasn't until they took the places of the men at war that they established their place in industry and won the right to vote.

Again, today, women are being forced to take the places of men called for active service. What they are learning will not be forgotten at the coming of peace no more than it was the last time.

Today the dealers who are "sitting pretty" are the ones who foresaw the value of service as a stabilizing factor in dealer operations. The leading men in retail aviation tomorrow will be those who see its value today. And, in just this way, many of the men with the self-supporting service departments tomorrow will be those who realize the potential customer value of women who drive; and who will plan their selling tactics, their campaigns, yes, even the appearance of their shops, to appeal to these women.

Perfect Circle Dividend

The directors of the Perfect Circle Co., on May 29, declared a dividend of 50 cents per share on the 162,500 shares of outstanding capital stock of the company. The dividend is payable July 1, 1942, to stock of record at close of business June 17, 1942.

BEARING DIRT

(Continued from Page 29)

balls. Of course, you can blow the air through from the side and hold both races so the bearing won't spin. If you've got to use an air hose, that's the best way."

"It don't hurt, though," said Chuck, "to spin it after you've cleaned it, does it?"

"It might not if it's been lubricated. If it hasn't, you're takin' chances. It's pretty hard to get a stream of compressed air that don't contain some moisture. When moisture gets on the dry bearing surfaces, it rusts, and then the rust wears off in service and leaves pits. You've got to watch out for rust especially after cleanin' with carbon tetrachloride. That stuff takes every last drop of oil off a bearing, so that even the moisture in the atmosphere will rust it, or the sweat from your hand."

"But maybe the bearing won't be no good anyway," said Chuck.

"If you can't see no damage, you've got to assume a bearing's right. You clean it and inspect it just to make sure. There ain't no point ruinin' a bearing that might be O.K., especially these days."

"I was sure gettin' ready to butcher one that time you caught me trying to drive it off with a chisel."

"I'm glad you mentioned that," said Pop. "I've been meanin' to tell you a couple of things I forgot. On some cars you run across self-enclosed bearings, where a shield is put over the separators to keep out foreign matter. You've got to be careful not to hammer or dent these shields. If you do, the metal bulges on the inside and rubs against the balls or races. That makes a noisy or generally unsatisfactory bearing."

"I almost wear kid gloves when I remove a bearing now," said Chuck.

Pop grinned. He liked the way the kid could take a lecture, and usually remember it.

"And you could do a lot worse than leave the kid gloves on when you're installin' a bearing. You never want to press on a bearing if it's cocked."

"You couldn't press it on if it wasn't true with the shaft, could you?" asked Chuck.

"Oh, you could get it on all right, but you'd crack the inner ring doing it. The same thing happens if you try to press a bearing on a shaft that's a hair too big. That's plain waste."

Chuck pushed his cap to the other side of his head.

"If we're so short o' new parts as all that," he said, "why do we always put in new bearings? Why couldn't we use a reground bearing?"

"We could," said Pop, "but we wouldn't do it in this shop. You see, kid, a bearing has got an important job to do in a car, no matter where

it is. After it's been in service a long time, it gets tired. Something happens to the steel. The engineers call it 'fatigue.' It seems to start deep in the metal and work out to the surface and, when it does, the metal cracks. Now when you regrind an old bearing you don't put any life into the old metal. As a matter of fact, you make things worse by taking off some of the metal that still has life in it. So we don't use second-hand stuff. It's not only not economical; it's downright silly."

Reaching for the wheel bearing, Chuck said: "I'll wash this again."

"A good idea, kid," said Pop. "And

after you do, wrap it in paper till we get the new cup."

"You make bearings sound interestin'."

"No more than they are," said Pop. "Take adjusting—" He glanced at his watch. "But I haven't got time to go into that today, kid. I've got a new man comin' in tomorrow, so I ought to have a minute or two free. We'll give the little matter of adjusting roll and ball bearings a going over."

"I'll be listenin'," said Chuck.

"Swell! In the meantime," he continued and he started for the office, "it wouldn't hurt anything to clean up that bench of yours."

No need for high-cost fixed equipment! No need for permanent floor space or turn tables! Just a level floor—and with the portable, speedy, inexpensive Snap-on set any mechanic can quickly and accurately check wheel camber, caster, toe-in and toe-out... and frame alignment as well!

Don't let this profitable business drive into other shops because you lack equipment! Talk to your Snap-on salesman... let him show you the film, "Profitable Wheel Aligning Made Easy". Or Write

SNAP-ON TOOLS CORPORATION
8036-G 28th Ave. • Kenosha, Wisconsin

20,000,000 TIRES

(Continued from Page 39)

or other essential users. Congressional leaders were confident that the Ellender-Murray bill would pass.

Further relaxation of rubber restrictions to enable workers in vital war industries to buy new tires was announced by WPA, effective July 15. The new tires, however, will be what the OPA classes as Grade II, that is, third, fourth and fifth lines. Stiff rules for eligibility are set up, among them a provision that the war worker

must carry at least three other workers or, if the car has a smaller capacity, a full load.

Plans for final solution of the rubber problem made little progress during June. One good-sized synthetic plant went into production but its output, like that of other plants authorized or buildings, will go to fill war needs and will leave none for civilian use. Planting of all available guayule seed was progressing and the United States was buying all Latin American crude that could be brought out of the jungles, but nowhere in official Washington was

there any disposition to alter previous predictions that no rubber, synthetic or homegrown, would be available for civilians before 1945.

Plans to conserve tires by reducing car use apparently were being held in abeyance until the conclusion of the scrap-rubber drive which ended June 30. Estimates of the scrap rubber recoverable have ranged from modest guesses to such fantastic figures as 10,000,000 tons. Obviously the latter is out of line because not much more than that has been imported by America over its whole history. Early returns on the scrap-collection drive also are misleading, since the figures published by newspapers were merely the weights of the scrap products. How much usable rubber can be recovered from the fabric and other components in much of the scrap can only be determined by final returns from the drive. The only figures to be had up to press time was the estimate by President Roosevelt that the first 14 days of the drive had netted about 219,000 tons. Since the drive has been extended for 10 more days, closing July 10, it is reasonable to assume that the total would be close to 300,000 tons.

If any considerable quantity of rubber is reclaimed, it will go a long way toward stretching out our stock pile of crude, yet it brings the day of abundant tires no nearer. No figures are to be had as to the exact extent of our crude stock or as to our military needs, for these are classified as military secrets, yet, if we are to share that meager stock with other anti-Axis powers, we must forego its use ourselves for ordinary purposes until domestic rubber or synthetic rubber can be produced in quantities great enough to take care of our military needs and leave enough for civilian use. Despite estimates made by this expert and that and even by government officials, responsible officials remain firm in their declaration that no rubber for civilians is to be expected for three years.

RECENT RULINGS

An amendment to the tire-rationing regulations now permits the holder of a certificate for a four-ply casing to buy a five-ply casing if he prefers. Previously, proof had to be shown that the vehicle for which the tire was desired could not be operated satisfactorily on a tire of lighter construction than five-ply.

* * *

Pneumatic and solid tires made for use on industrial equipment must henceforth contain a larger percentage of reclaimed rubber and less crude, the WPB has ruled. The saving in crude is expected to be 300 tons.

* * *

Dr. Charles F. Phillips, of Syracuse, N. Y., has been appointed to the

(Continued on Page 67)



YOU'RE LUCKY

Three ways

IF YOU HAVE A WAYNE
AIR COMPRESSOR

Slower operating speed means much longer life

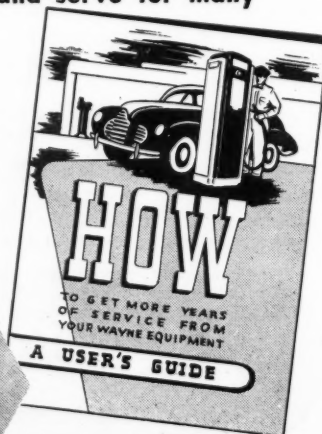
Guaranteed Efficiency means less power cost

Wayne's nationwide service organization is back of it

WINNING the war means making the things we have last longer and perform better. Our Service Engineers are ready to help when real trouble develops, but a little "Preventive Maintenance" on your part will help prolong the life of your Wayne Air Compressor and pay big returns in higher efficiency and lower operating cost. Except where downright neglect prevents it, Wayne Compressors now in the hands of our customers should outlast the war and serve for many years after.

SEND FOR BOOKLET

Ask for your copy of our new "Users' Guide," a handy service manual that tells you how to get longer years of Service from your Wayne equipment. No charge.



THE WAYNE PUMP COMPANY
FORT WAYNE, INDIANA



Designed to prevent skidding on glare ice this new airplane tire, produced by the U. S. Rubber Co., has a tread studded with sharp crimped-steel inserts. Ernst Eger, the inventor, stands beside the tire, which is intended for U. S. forces in Iceland and Alaska.

RECENT RULINGS

(Continued from Page 66)

newly created position of director of the Automotive Supply Rationing Division of the OPA. He will have charge of rationing new passenger cars, tires and bicycles. A former professor of economics at Colgate University, Dr. Phillips had been chief of the Tire Rationing Branch of the OPA. Robert S. Betten succeeds to the latter post.

* * *

Canadian petroleum producers, refiners, transporters and markets will henceforth have the same assistance in obtaining materials as Americans. An amendment to order P-98 assigns preference ratings from A-1-a to A-10 to Canadians.

* * *

WPB order L-128 just issued requires purchasers of exhaust valves to turn in a worn or defective valve to obtain a new one. The step has been taken to conserve the vital metals used in these valves.

* * *

Vehicles used to transport children under 18, together with their attendants, to and from a summer camp have been added to List A by the OPA and thus made eligible for tires and tubes. However, written authorization must be obtained from the Regional Recreation Representative of the Office of Defense Health and Welfare Services. The vehicle may be used exclusively for carrying children to and from camp or may be employed for other purposes, provided the other uses are within List A eligibility requirements.

* * *

Up to and including June 6, the WPB had released 15,999 trucks of all kinds, 2,381 trailers, and 179 mis-

cellaneous vehicles to civilians since rationing began March 9. Holders of Government Exemption Permits had received 18,048 trucks of all kinds, 840 trailers, and 2488 miscellaneous vehicles. The GEP group includes exports by private individuals.

* * *

In posting ceiling prices for motor fuel, the OPA has issued the following specific instructions:

"Every person subject to Regulation No. 137, must post the maximum prices for each grade of motor fuel in a manner plainly visible to, and understandable by, each customer. Such posting shall be marked 'Maximum Prices,' beneath which shall be

marked each grade of motor fuel 'premium, regular, third' offered for sale and opposite each grade shall be stated the maximum price for that grade of motor fuel."

* * *

Pressure on certain tire recapping and retreading shops is contemplated by the OPA, which reports that local rationing boards have been receiving complaints on the quality of work done by some shops. Local boards have been asked to turn in the names of retreaders and recappers whose work has led to complaints and, if possible, the name of the firm supplying him with camelback. This will

(Continued on Page 68)

Helping Thousands of Dealers Meet War-Time Problems

Packard Certified Re-Wiring Service is based on an *educational program* for the promotion of better electrical service. The complete, easy-to-use instructions and valuable electrical information contained in the Certified Re-Wiring Manual, "Copper Nerves," is helping thousands of mechanics do more satisfactory work for their customers.

Today, this educational program has taken on new importance. Packard Certified Re-Wiring helps dealers train "green" mechanics... gives new men a sound understanding of how the electrical system functions and how to service it. The simple, efficient checking procedure illustrated in the Certified

Re-Wiring Manual also *speeds* electrical service of all kinds; it enables dealers to handle a larger volume of profitable business in spite of the shortage of skilled help.

There has never been a better time to become a Packard Certified Re-Wiring station, and get *all* the benefits of this splendid program. See your Packard jobber. Packard Electric Division, General Motors Corporation, Warren, Ohio.

Packard
REG. U.S. PAT. OFF.
TRADE MARK
"Working for Victory"

THE STANDARD WIRING EQUIPMENT OF THE AUTOMOTIVE INDUSTRY

RECENT RULINGS

(Continued from Page 67)

enable the OPA to get in touch with the supplier, who could attempt to iron out the retreaders' difficulties.

* * *

An amendment to the used-tire price ceiling issued March 7 forbids the sale of used tires or tubes at such prices if they are not serviceable without repairs. The amendment provides that the cost of necessary repairs must be deducted. The repair charge must equal the charges pre-

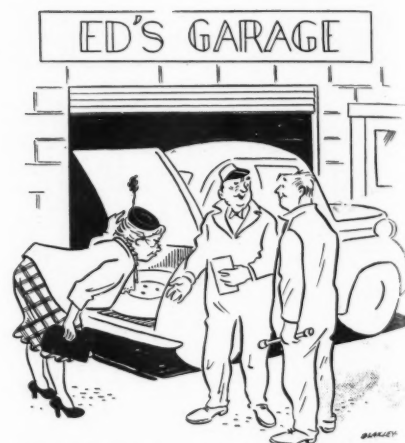
vailing in the seller's locality on March 7, 1942.

* * *

Alden C. Brett, treasurer and comptroller of the Hood Rubber Co., has been appointed deputy coordinator for rubber.

* * *

Butyl alcohol has been placed under complete allocation control by the WPB, although deliveries to persons using less than 54 gallons a month may be made without allocation, providing the total of these deliveries does not exceed 2 per cent of a producer's monthly output. The



"She liked the grease job you did, now she's checking the carburetor adjustment you made."

chief use of butyl alcohol in the automotive industry is in the manufacture of brake fluid.

* * *

Retreaders and recappers who have not yet applied for an initial allotment of camelback for passenger-car tires still may do so. Shops that acquired molds after applying for an allotment may apply for an allotment for the new molds. The applicant for camelback allotments must fill out Form R-23, and must present an affidavit stating he has not previously applied for camelback for the molds for which he seeks material. The affidavit must also explain the reason for not applying before the April 30 deadline.

* * *

Relaxation of passenger-car-rationing rules has resulted in a sharp increase in the number of cars delivered in April as compared with March, the OPA reports. On the basis of reports from 31 states, a total of 29,600 were released during April. In March only 17,059 passenger cars were delivered. In addition, 28,000 cars purchased but not delivered before Jan. 1 have been released.

These deliveries reduce to 326,000 the number of passenger cars available for rationing in the 12 months ending Feb. 28 next year. This figure does not include the government pool of 135,000, held for military use and civilian rationing in 1943.

* * *

A further change has been made in the order limiting jobbers' inventories. The base period to be used in determining permissible inventories has been changed from the second preceding month to the preceding quarter. Thus a jobber located in the Eastern or Central time zones may now carry stocks equal to two thirds the dollar value of such goods sold by him during the preceding months. In other time zones, jobbers may maintain inventories equal to the full dollar value of sales during the previous quarter.

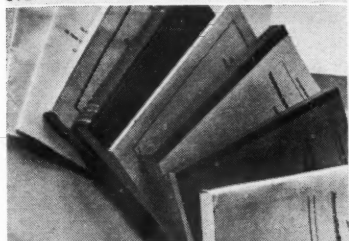
PRODUCTION FOR VICTORY
 . . . Kellogg has accepted its responsibility to a fighting America. Currently in production are compressors and special parts and assemblies for the Army, Navy and Air Corps.

QUALITY BUILT-IN AT THE FACTORY means long efficient service in your shop—Kellogg has long been known as a manufacturer who makes no compromise in materials, workmanship or inspection in the production of automotive service equipment. Why do we go the limit to maintain this reputation? Not because you care about "quality in a compressor" itself, but because you know this quality means long life, low upkeep, the most you can get for your dollar in such equipment.

AMERICAN BRAKE SHOE & FOUNDRY CO.
Kellogg American
 KELLOGG DIVISION
 ROCHESTER NEW YORK U.S.A.

AIR COMPRESSORS • CAR LIFTS • CAR WASHERS • PAINT SPRAY EQUIPMENT

CATALOGS MANUALS



BOOKS AND MERCHANDISING AIDS

A booklet telling of the value of wheel alinement and wheel balancing in the conservation of rubber has been used by the Bear Mfg. Co., Rock Island, Ill. This booklet is intended for distribution to customers. Address your request for copies of the "Tire Savers Manual" to the Bear Mfg. Co., Rock Island, Ill.

* * *

The 1942 Edison spark plug catalog of the Edison-Splitdorf Corp., West Orange, N. J., is now in the hands of wholesalers for their salesmen and counter books. It contains all specifications, eliminating the usual supplement book, and includes 1942 recommendations.

* * *

Weaver Mfg. Co., Springfield, Ill., has issued a new wheel-alinement manual consisting of 12 separate booklets bound in one loose-leaf cover. It is designed for use by technical high schools, colleges and universities as well as in Emergency Defense Training courses. It is included as an instruction book with each order for complete Weaver alinement outfits, or single copies may be obtained for \$1 each.

* * *

A new 84-page Size Book has just been supplied to all Pedrick jobbers by the Wilkening Manufacturing Co., of Philadelphia and Toronto.

In addition to listing piston ring specifications for automobile, truck and bus, tractor and marine engines, the new Size Book incorporates two outstanding features: A list of trucks and buses showing the engine make and model usually found in each, and specifications for older models usually omitted from such a book. Many of these models go back 15 years or more.

Interested jobbers should write to the Wilkening Manufacturing Co., 2000 S. 71st St., Philadelphia, Pa.

* * *

Southern Friction Materials Co., Charlotte, N. C., has issued Catalog 41-BL-3, giving complete descriptions and list prices of its line of automobile passenger car and truck brake lining. Copy will be sent upon request.

New Non-Skid Tire for Post-War Use

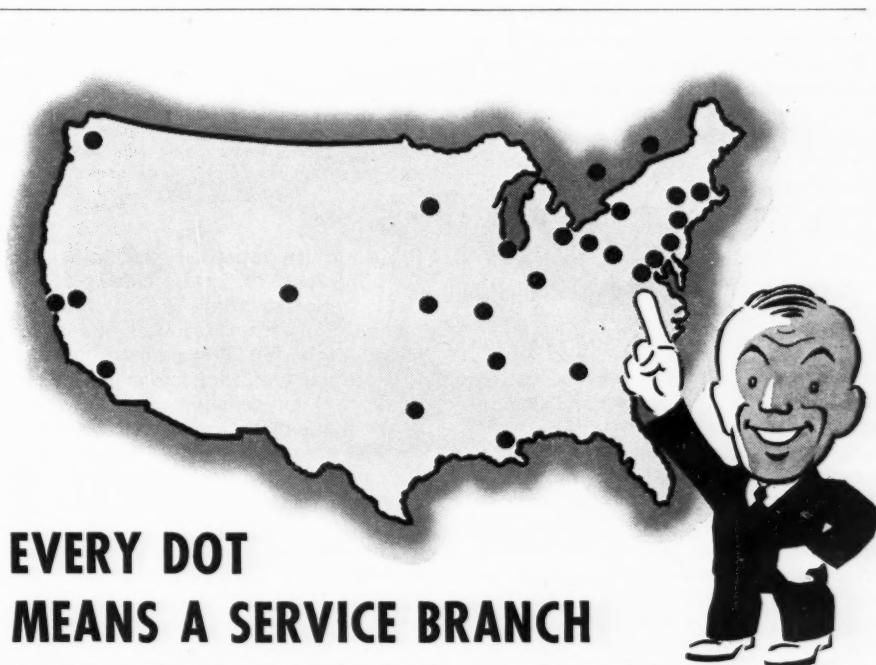
With a full-page ad in *Collier's*, the Pennsylvania Rubber Co. announced on April 18 the development of a new non-skid tire to be produced after the war ends. The new tire, an instance of post-war thinking by American business, employs the vacuum principle, which this company popularized years ago with its vacuum-cup tread.

Known as the "Silent Vacuum Cup" tire, the new tire has a tread that overcomes the noise which characterized the older tire. This has been accomplished by indenting the

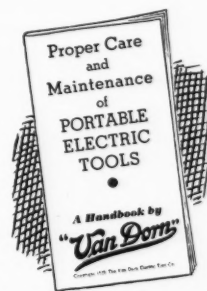
vacuum space in the tread of the tire and providing grooves that relieve the vacuum gradually before the indentations lose contact with the highway, thus eliminating noise.

Sisson Appointed

Donald H. Spicer, president of World Bestos Corp., Paterson, N. J., announced the recent appointment of Homer B. Sisson as a special representative to automotive manufacturers. World Bestos, manufacturer of Grafil brake linings, is establishing a new office for Sisson at 1405 Henry St., Detroit, where he is very well known.



**EVERY DOT
MEANS A SERVICE BRANCH**
To Keep VAN DORN Tools on the Job!



Free Booklet on "Proper Care of Portable Electric Tools" shows you how to get the most out of your Van Dorn Electric Tools.

As long as our fighting men need Van Dorn Tools to build war goods for them, we are limited in the number of new Van Dorns we can sell to you. But we certainly can keep your present tools on the job and in tip-top shape. Van Dorn's 26 Factory-owned Service Branches from coast to coast mean you are no farther than overnight from any parts or repairs you need. With mechanics scarce, remember: your good Van Dorn Tools were built for overtime work. Use 'em hard, but use 'em right, and we'll keep 'em humming. Ask your jobber, or write to The Van Dorn Electric Tool Co., 727 Joppa Road, Towson, Maryland.

"Van Dorn"
(DIV. OF BLACK & DECKER MFG. CO.)
PORTABLE ELECTRIC TOOLS

SAVE TRUCKS

(Continued from Page 23)

rubber through improper driving and service are cited.

In fulfilling the pledge, truck owners and drivers are urged by the ODT to have their vehicles inspected and serviced by reliable shops. Emphasis is placed upon following manufacturers' recommendations on all adjustments.

Dealer and independent repair shops alike can contribute substantially to the success of the truck-conservation program. Since these shops as well as truck-factory branches will distribute the official insignia, they will be in a position both to encourage compliance with the program and to offer inspection service. As with all inspections of the sort, they are bound to be the source of new repair business. Service shops equipped to handle this business will obtain it and at the same time further a program designed to keep highway transport flowing without interruption.

PRICE CEILINGS

(Continued from Page 19)

serviceman in most cases is no greater. Under the general price regulations, the shop had to compile and keep on hand for consultation by customers the highest prices charged in March for every item and service handled, and he was required to file with the OPA a list of his ceiling prices on the merchandise classified as "cost-of-living" items. The new regulations require him to compile by Sept. 1, 1942, and keep on hand the list of ceiling prices for service, and



"Oh, it could have been lots worse—
not one of my tires was punctured,
you know."

this list also must be filed with the OPA by Sept. 10, 1942. However, the OPA indicates that, if his flat-rate manual contains the jobs handled, he may simply file a statement naming the manual and showing what hourly labor rate he is using. For example, if the manual is the Chilton book, his statement would attest to the fact and explain that he is using the \$2 rate or whatever rate he used in March.

The statement of ceiling prices on cost-of-living items still must be filed, as these come under other price regulations, and ceiling prices must be posted conspicuously in the shop. These items include gasoline, kero-

sene, fuel oil, lubricating oil, tires, light bulbs, inner tubes, bicycles, and flashlights, as well as cigars, smoking tobacco, and ice cream.


Set Anti-Freeze Price

Maximum prices for anti-freeze were established June 25 by the OPA. Previously these had been set by the General Price Regulation, but it was found, the OPA declares, that the March prices, upon which the maximums were based, were in some cases speculative, and it was thought best to establish new ceilings. In the case of ethylene glycol, the new maximum is the highest price in the month during the six-month period ending March 31, 1942, during which the retailer sold the greatest amount of anti-freeze, but in no case is it to exceed \$2.65 a gallon or 70 cents a quart. Non-permanent types of anti-freeze, produced from natural alcohol, is to be sold at not more than \$1.40 a gallon, while that produced from synthetic alcohol must not exceed \$1.10 a gallon.

Wins Ad Award

For the second consecutive year, The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has won a national award for its advertising campaign. At the annual convention of the National Advertising Agency Network, held in St. Louis, Mo., May 28, 29, and 30, the campaign entered in the Best Business Paper campaign competition by Manhattan was chosen the best in its class.

Conservation of rubber and rubber goods was the keynote of the campaign.



**GUNK
CLEANS
New Army
Lustreless Paint
Preserves 100%
Camouflage . . .
No Shine**

This versatile, emulsifying solvent anticipates every military and industrial grease cleaning problem . . . especially effective cleaner for small arms and cannons.

THE CURRAN CORP., Mfg. Chemists, Malden, Mass.

Put the "ALL-AMERICAN TRIO" in Your Car Conservation Program

★ Use these specialized lubricants to complete your service. They last the life of a lube job and help to reduce wear on parts. Order from your jobber—now!

DOOR-EASE
Dripless Oil
Enters as a rapid penetrating oil . . . congeals to a lasting, dripless lubricant. Use for hinges, locks, brake fittings and other concealed friction parts. "Runs in . . . Will not run out."

RUGLYDE
Rubber Lubricant
100% safe for rubber parts requiring a penetrating lubricant. Safe on rubber—Lubricates and preserves. Safe on car finish—Won't harm finest lacquers. Safe on service man—Non-flammable, non-poisonous.

DOOR-EASE
Stainless Stick Lubricant
For exposed friction surfaces. Stops squeaks, binding and wear of door dovetails, striker plates, rubber bumpers and seals, hood linings, etc. Won't stain clothing or car upholstery.

**AMERICAN GREASE STICK COMPANY
MUSKEGON, MICHIGAN**

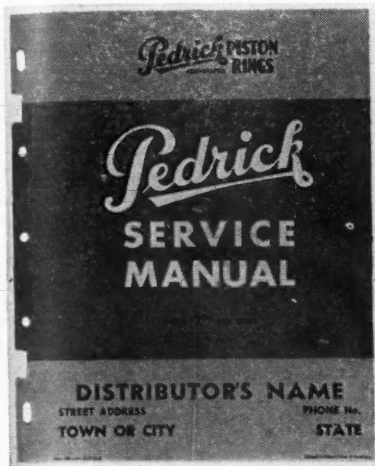
We're making only war materials now—to hasten the day when we may serve you again with . .

ARVIN

**All-Metal Furniture
Home and Car Radios
Hot Water Car Heaters
Bathroom Electric Heaters
NOBLITT-SPARKS INDUSTRIES, INC.
Columbus, Indiana**

Motor Reconditioning Manual Offered Shops

The Wilkening Manufacturing Co., of Philadelphia and Toronto, maker of Pedrick piston rings, has just issued a new and up-to-date manual on motor reconditioning called the Pedrick Service Manual.



In its 60 pages will be found a practical discussion and guide to the best accepted practices in general motor reconditioning, with special emphasis on piston-ring installations. In addition to the general section, there are 20 pages of reconditioning facts for specific engines arranged alphabetically by engine make.

The entire manual is generously illustrated with photographs, drawings and charts.

Anyone interested in having a copy should get in touch with his nearest Pedrick jobber through whom the distribution of the new manual will be handled.

Martin Named Head of Safety Fund Drive

Royce G. Martin, president of The Electric Auto-Lite Co., has accepted the National Chairmanship of the Automotive Parts Division of the War Production Fund to Conserve Manpower. As national chairman, he will organize and direct a vigorous campaign in the automotive parts industry for funds to support a nation-wide accident-prevention program.

Under the auspices of the National Safety Council, leading industrialists have opened a campaign to obtain \$5,000,000 to cover the operation for two years of a greatly expanded safety program. Serious interruption to war production caused by an increasing toll of accidents on and off the job has resulted in President Roosevelt calling on the Council, and on every citizen, to do everything possible to prevent this waste of human life and vital material.

In commenting on the contribution the automotive parts industry is asked

to make to the fund, Martin said: "I consider this great safety program a most vital part of our country's war effort. The outstanding contribution made to war production by the Automotive Parts Industry makes me confident it will do more than its share in furthering this tremendously important safety work."

Bathrick Joins Grant

Don U. Bathrick, general sales manager of the Pontiac Motor Division of General Motors Corp., has been appointed assistant to R. H. Grant,

vice-president of the corporation in charge of relations between General Motors and the government in connection with war materials. Grant continues in his distribution functions with General Motors and its operating divisions in addition to his war emergency duties.

Bathrick's association with General Motors began in 1927 when he joined the Chevrolet Division in its Cincinnati sales office. He began his association with Pontiac in 1930, soon becoming assistant general sales manager. In 1939 was promoted to the position of general sales manager.

Just grab the handles of a "HALLOWELL" Portable WORK BENCH and push it to the job—like a wheelbarrow. Two legs mounted on non-swiveling casters; two legs plain. Handles fold out of way. "HALLOWELL" lifetime construction throughout. Tops of steel or Masonite; or of laminated non-conductive oil and water-proof wood.

Over 1300 other bench combinations available to meet every normal or special shop need.



HALLOWELL TOTE PANS

Ideal for handling and storing small parts, etc. Of "nesting" type design, as shown. No wobbling, even when piled high. Built of welded steel for heavy service. Won't pull apart, splinter or soak oil nor water; can't burn. Standard size 18" x 10" x 6". Depth of storage space when nested, 5". Other sizes furnished.

"HALLOWELL"
Shop Equipment:
Work Benches,
Tables, Stools and
Chairs, Floor Trucks,
Tote Pans.
Write for Catalog.

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 561

— BRANCHES —

BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO

Following is a brief digest of important articles appearing in this issue of **MOTOR AGE**. Read the digest and discuss the service procedure and the topics of interest with your customers.

SAVE THE TRUCKS

Preventive service, so long advocated by servicemen and adopted widely by fleet operators, has now received the official sanction of the Office of Defense Transportation. Its



campaign to obtain the pledge of every truck owner and driver to maintain his vehicles in first-class condition is designed to keep our highway transport system operating at peak efficiency through the war. The campaign is interesting also to repair shops, for they will be called upon to furnish a good share of the service. This article explains how they can cooperate.

NEW PRICE CEILINGS FOR SERVICE

The ink had hardly dried on the original price-regulation order before the Retail Trade and Service Section of the OPA took over the administration of retail service and issued a whole new set of rules. These affect everyone who stores, services, or repairs passenger cars, and everyone so affected will find in this presentation of the salient points of the new regulations the facts he needs to comply with the order.

SERVICE THE W1 TYPE CARTER CARBURETOR

Complete disassembly of this carburetor is described in an exceptionally complete series of photographs.



Carburetor work has been given a new importance in all Eastern states by gasoline rationing, and even in sections where fuel is not yet being doled out owners have become aware of the importance of correct carburetor adjustment. As this picture article points out, the best results can be obtained only by replacing worn parts.

WE MUST HAVE CARS

In the face of warnings from Washington that cars may be forced from

JOBBER'S OF THE JULY

JUST as the military commander must develop a strategic plan before he orders an attack, the serviceman today must have a general plan of action before he can handle the details of his day-to-day business. A general may concentrate too many of his troops at the wrong point, and the serviceman may concentrate too much of his attention on a line that offers the poorest chances of success.

In war, a military commander must have complete, up-to-the-minute facts about the situation, and in the service business today the serviceman must have the latest and most reliable information available.

A glance at the accompanying digest of the articles in this issue will show that **MOTOR AGE** is sparing no effort and no amount of space to bring the serviceman the type of information he needs. Reading the articles, the serviceman is in position to act not only wisely but promptly.

the road for one reason or another, it is encouraging to read this report from an independent agency that conducted a comprehensive study and came up with the fact that at least 20,000,000 passenger cars must be kept running during the war if our highway transport is not to break down.

CUSTOMERS 5c EACH

A novel and inexpensive plan worked out by one service shop to impress its service upon the minds of customers and keep them coming back. And it works. It's the kind of plan most service shops can use to advantage just at this time.

HINTS FOR CAR STORAGE

Everyone that has the interest of the country at heart is striving to keep all automobiles on the road and in good running condition. However, there are some panicky owners, who cannot be persuaded to take a long-term view of the situation and insist upon laying up their cars for the du-

ration. It's a costly and risky step unless proper precautions are taken. This article explains in detail the kind of lay-up job the serviceman should and can sell the jittery owner.

WHAT'S WRONG HERE?

Another in the interesting series of picture lessons on the correct handling of tools. These photographs have been popular not only because young mechanics often need such coaching, but also because it is unwise to take chances on ruining a part through the wrong use of a tool or the use of the wrong tool.

TIRE SERVICE

A helpful picture presentation of the easiest and fastest way of dismounting and remounting tires on drop-center rims.



DIGEST MOTOR AGE

HOW'S BUSINESS

A MONTHLY REPORT ON MAJOR ITEMS BY 500 JOBBERS

JUNE, 1942

| NATIONAL TOTAL | Good | Fair | Poor | NATIONAL TOTAL | Good | Fair | Poor |
|------------------------------|------|------|------|--------------------------|------|------|------|
| ACCESSORIES | | | | REPLACEMENT PARTS | | | |
| | Poor | | | | Good | | |
| Abrasives | 45 | 77 | 25 | Axle Shafts | 28 | 60 | 54 |
| Anti-Freeze | 32 | 30 | 59 | Ball and Roller Bearings | 79 | 66 | 10 |
| Car Radio Sets | 6 | 81 | | Brake Lining | 85 | 64 | 11 |
| Car Radio Accessories | 10 | 77 | | Bushings | 40 | 77 | 28 |
| Chains | 9 | 101 | | Chains (Timing) | 26 | 71 | 55 |
| Heaters | 5 | 107 | | Clutch Plates and Parts | 75 | 58 | 14 |
| Horns | 3 | 21 | 91 | Fan Belts | 113 | 47 | 11 |
| Lacquers | 43 | 74 | 31 | Gaskets | 107 | 46 | 7 |
| Oil Filters | 78 | 78 | 11 | Gears (Rear Axle) | 28 | 69 | 48 |
| Oils and Greases | 24 | 70 | 28 | Gears (Transmission) | 39 | 68 | 37 |
| Polish | 35 | 94 | 22 | Mufflers | 97 | 58 | 8 |
| Seat Covers | 32 | 76 | 40 | Pistons | 50 | 83 | 19 |
| Thermostats | 2 | 21 | 111 | Pins | 67 | 73 | 12 |
| | 294 | 571 | 784 | Rings | 91 | 55 | 11 |
| SHOP EQUIPMENT | | | | Radiators and Cores | 17 | 32 | 69 |
| | Poor | | | Spark Plugs | 86 | 52 | 25 |
| Battery Charging Equipment | 3 | 32 | 108 | Springs (Chassis) | 35 | 56 | 33 |
| Car Lifts | 7 | 7 | 123 | Valves | 72 | 67 | 12 |
| Car Washers | 6 | 121 | | Water Pump Parts | 69 | 70 | 11 |
| Compressors | 7 | 36 | 95 | Engine Bearings | 104 | 43 | 8 |
| Drills (Electric) | 34 | 56 | 56 | | 1308 | 1215 | 483 |
| Electrical Testing Equipment | 5 | 34 | 97 | ELECTRICAL UNITS | | | |
| Jacks (Garage) | 23 | 67 | 59 | | Fair | | |
| Lubricating Equipment | 8 | 48 | 86 | Armatures | 41 | 77 | 15 |
| Paint Spray Equipment | 7 | 47 | 84 | Batteries | 38 | 92 | 27 |
| Tire Service Equipment | 15 | 32 | 82 | Cable (Battery) | 52 | 88 | 22 |
| Tool Kits and Sets | 26 | 44 | 64 | Coils | 47 | 83 | 21 |
| Valve Refacers | 10 | 36 | 92 | Other Ignition Parts | 60 | 83 | 14 |
| Wheel Aligners | 9 | 24 | 96 | Fuses | 38 | 96 | 22 |
| Wheel Balancers | 8 | 34 | 92 | Ignition Wire and Cables | 47 | 90 | 17 |
| Frame Straighteners | 3 | 11 | 121 | Lamps | 57 | 88 | 13 |
| Headlight Testers | 2 | 13 | 109 | | 380 | 697 | 151 |
| Welding Equipment | 28 | 43 | 65 | | | | |
| | 188 | 570 | 1550 | | | | |

MOST ACTIVE LINES

| Position of Leaders | June 1942 | June 1941 | July 1941 |
|------------------------|-----------|-----------|-----------|
| Fan Belts | 1 | 6 | 4 |
| Gaskets | 2 | 3 | 3 |
| Engine Bearings | 3 | 5 | 5 |
| Mufflers | 4 | 1 | 1 |
| Rings | 5 | 4 | 6 |
| Spark Plugs | 6 | 2 | 2 |
| Brake Lining | 7 | 8 | 7 |
| Ball & Roller Bearings | 8 | 11 | 9 |
| Lacquers | 9 | 9 | 10 |
| Clutch Plates & Parts | 10 | 12 | 8 |

HOW ITEMS ARE RATED

"Most Active Lines" are chosen on the basis of the highest number of jobber reports indicating "Good" for the items selected among the twenty most active lines. "Activity" as used here has no bearing on volume, so the lists should not be interpreted as meaning the lines on which jobbers are enjoying the greatest volume. Most active lines are those which the greatest number of reporting wholesalers indicate are selling "considerably above normal" in their particular markets.

| Positions of Leaders | June 1942 | June 1941 | July 1941 |
|-----------------------|-----------|-----------|-----------|
| Valves | 11 | 13 | 15 |
| Water Pump Parts | 12 | 15 | 12 |
| Pins | 13 | 18 | 20 |
| Other Ignition Parts | 14 | 14 | 11 |
| Lamps | 15 | 16 | 16 |
| Cable (Battery) | 16 | 19 | 17 |
| Pistons | 17 | | |
| Ignition Wire & Cable | 18 | 20 | 14 |
| Coils | 19 | | 19 |
| Abrasives | 20 | 17 | |

HOW TO READ THIS CHART

Information from which this chart is compiled is obtained monthly from a selected list of 500 wholesalers. Figures show the number of wholesalers reporting. Normal is taken as average sales for this month during the past few years.

Good—Sales considerably above normal.
Fair—Sales slightly above or below normal.
Poor—Sales noticeably below normal.

WHAT WILL WE USE FOR GAS?

Although we can produce far more gasoline than we could possibly use, transportation difficulties and official whims have created a severe shortage in the East and rationing is threatened for the entire country. It is only



natural at such a time to begin thinking of substitutes, and this discussion of the developments in other countries, the first of a series, will satisfy many servicemen's curiosity about producer gas, alcohol blends and other substitutes.

WOMEN AS SERVICE CUSTOMERS AFTER THE WAR

Here's something for the serviceman to think about. Thousands of women are learning how to take a car apart and put it together again as a phase of their war activities. After the war, this new knowledge of service will make them more critical of the kind of service they buy, and thereby making them prospects for the best to be had.

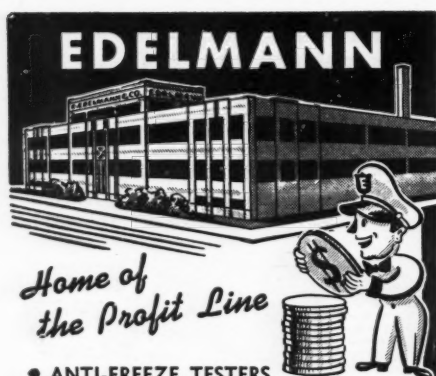
WASHINGTON WHISPERS

With the ear of the country tuned more and more to what is being said in Washington, as well as what is being done there, MOTOR AGE this month introduces a Washington column. This is in addition to the spot news from the capital, which has been published month by month. The column is concerned not so much with what has happened as with what is likely to happen. No one can definitely announce in advance the intentions of government officials, but frequently it is possible to make a shrewd guess. So far as they relate to the automobile business, these probabilities, along with interesting facts and figures, will be found in the column.

SOME DIRT ON BEARINGS

The new Pop O'Neill yarn in which Pop discovers his new mechanic mishandling bearings and gives him some valuable pointers on their care and cleaning. These yarns were intended to give young, green mechanics the hang of doing a job carefully and correctly, but since they've been appearing, older hands have told us they learn from them many things they either had never realized or had forgotten.





- ANTI-FREEZE TESTERS
- BATTERY HYDROMETERS
- BATTERY FILLERS — SERVICERS
- BRASS FITTINGS
- FLEXIBLE FUEL LINES
- BRAKE PARTS
- HEATER PARTS
- TIMING LIGHTS
- CAN OPENERS — POURING SPOUTS
- FREDERICKS ARMATURES

Consult your Jobber or write

E. EDELMANN & CO.
CHICAGO • ILLINOIS



10,000 MILE RING AND LABOR GUARANTEE
See your Ramco Jobber or write Ramsey Accessories Mfg. Corp., 3693 Forest Park Boulevard, St. Louis, Missouri.

FITZGERALD
GASKET CRAFTSMEN SINCE 1906
GASKETS

*The complete line
that completely satisfies*

The Fitzgerald Manufacturing Company
Torrington, Conn.

HEIN-WERNER
HYDRAULIC
JACKS

are built right and priced right

Ask your jobber or write us for
details on complete line

HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

New Pledge Certificate

Grey-Rock jobbers are offering dealers a new wall certificate which shows that the dealer is pledged to follow the National Safety Council brake servicing schedule.



This attractive, new display is lithographed in three colors, embossed, and individually numbered to register each station that displays it. As an indication of cooperation with the proclamation made by the President of the United States, asking the National Safety Council to work for greater highway safety, this Wall Certificate becomes an increasingly important asset to every shop that displays it.

Welded Service Station

Five fires, with losses totaling over \$68,000, has been the unlucky plight of C. H. Riffle, owner of a huge super service station and garage in the heart of the Mojave Desert in California. To prevent future fire losses, Riffle built a 50 by 50 foot all-welded gas station.

Over a mile and a half of used pipe was used in the framework. First, the entire side frame of 2½ in. pipe was laid out and welded in sections on the ground. Bottom ends of the wall frame were fillet welded and bolted to the concrete foundation. As each section was raised, it was butt welded to the previous one. Cross braces, made from 1½ in. pipe, were welded in a similar manner.

Roof trusses, made from 1½ in. pipe also, were fabricated on the building site. Total cost of previous wooden frame building was \$7000. Cost of welded pipe building was \$4500.

Named Comptroller

Appointment of Eugene P. Rougé to the position of Comptroller of the Monmouth Products Co., of Cleveland, Ohio, manufacturers of king bolt sets, engine bearings, clutch plates and parts, is announced by the company's board of directors.

Rougé has for several years been a partner in the firm of Moise & Burgess, of Cleveland, certified public accountants. In that connection, he supervised the accounting practices of the Monmouth Products Company for the last five years, and thus became thoroughly familiar with the company's financial operations as well as its customer relations.

WITTEK
NOC-OUT
HOSE CLAMPS



Standard throughout the industry for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Sold by dealers and jobbers everywhere.



WITTEK MANUFACTURING CO.
4305 W. 24th Pl.
Chicago, Illinois

VITAL TO —

- Low Mileage Costs
- Easy Operation
- Maintained Schedules



SKF

BALL AND ROLLER BEARINGS



TRUCK OPERATORS!

Save your tires! Cut down on gas and oil consumption. Save wear and tear on brakes, clutches and other vital parts. Prevent accidents . . . save time and money . . . Keep Rolling with less use of brakes with BUELL AIR HORNS.

Write for descriptive chart.

BUELL MANUFACTURING CO.
2991 Cottage Grove Ave., Chicago, Illinois

ONLY WALKER SILENCERS HAVE

"I.T."

**SEE YOUR WALKER JOBBER
ABOUT "INDIVIDUAL TUNING"**

WARNING

Anyone removing tires, gas
or fixtures from this car is a
THIEF

Please call **POLICE** immediately.
I'd do the same for you.

THE OWNER

Window sticker being offered by the Miller
Manufacturing Co., Camden, N. J., to help
owners protect tires and accessories. The
sticker is being distributed through jobbers
and shops handling Wonderweld products.

Van Norman to Help

Locate Used Machines

Currently announced by Charles
R. Crowder, manager of the Automot-
ive Division of the Van Norman Ma-
chine Tool Co., Springfield, Mass., is
the beginning of a voluntary effort by
the company to help the war economy
by serving, without charge, as a clear-
ing house between shop owners who
have service machines that are not
in use, and other shop owners who
have need of such machines.

Shop equipment of all types is need-
ed in large quantities in certain sec-
tions of the U. S. and Canada—
particularly cylinder boring bars,
piston grinders (either cam or plain),
brake drum lathes, engine lathes,
cylinder grinders, milling machines,
crankshaft grinders, planers, shapers,
cylindrical grinders, reamer drives
and similar equipment.

Shop owners having any of the
listed or related equipment, which
they are not using, are requested to
write to Crowder, giving full infor-
mation as to type, make, age, model,
serial number, motor specifications,
actual condition, price.

Upon receipt of this information,
Van Norman will tabulate the returns
and publish the complete list of avail-
able equipment in the Van Norman
Shop News, which will be mailed to
all jobbers immediately.

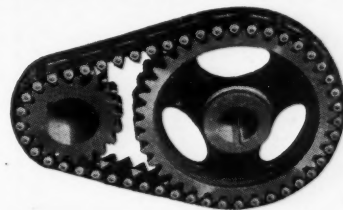
Urge Battery Care

"Care and Conservation" of the
motorist's storage battery is the
theme of the fall dealer program for
Delco Batteries which is now being
presented to the Delco battery dis-
tributing organization by United Mo-
tors Service.

Dealers will be urged to perform
a rigid inspection and service plan on
all customers' batteries and help to
prolong their utility as much as pos-
sible. Three sales crews of United
Motors Service are now conducting
meetings in the principal cities.



LINK-BELT Silverstreak SILENT CHAIN



SELF-ADJUSTING
Quiet—No Back Bend

LINK-BELT COMPANY
519 North Holmes Ave., Indianapolis, Indiana
Warehouses in all principal trading centers

Also makers of Link-Belt Roller Bearings for
Front Wheels, Differentials and Rear Axles

8828-B

ADVERTISEMENT

BUSINESS OPPORTUNITIES

STATE DISTRIBUTORS FOR

UNUSUAL FOOD OPPORTUNITY

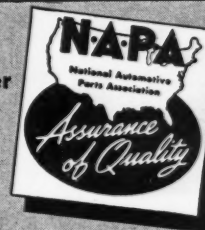
For every 120 people in your state there
is one potential dealer for this line.

After a personal investigation, an execu-
tive of one of the largest radio manufac-
turers in the United States has written
his distributors to take this proposition
if they can get it in their territory, and
makes the statement to them that in his
opinion the exclusive distribution of our
product should be as valuable as a Coca-
Cola franchise.

Our food is sold now in territories which
have been opened by Woolworth, Kress,
Walgreen, Lane, Kresge and many other
chains. On their FIRST DAY with this
line, a Texas distributor opened 15 ac-
counts; an Oklahoma distributor opened 15
accounts; a North Dakota distributor sold
50 cases to ten of the first eleven accounts
he called on. In ONE DAY a New Jersey
distributor ordered 70 cases; a California
distributor ordered 200 cases; an Okla-
homa distributor ordered 202 cases; an
Arkansas distributor ordered \$916.00
worth; a Louisiana distributor sent in
over \$600 worth of orders.

Every hotel, restaurant, sandwich shop,
grocery, delicatessen, hamburger or hot
dog stand; every drug store and 10c store
serving food, is a potential dealer. Dis-
tributor protected with exclusive ten year
contract. National advertising contracted
for and manufacturer also shares cost of
local advertising, both radio and news-
paper. A marvelous popular priced food
for the masses, Trade Marked and pro-
tected so its distribution means an exclu-
sive business without competition. Noth-
ing like it in America. If you are looking
for a distributing business which will be
good not only during the war but after
the war as well, an unusual money making
opportunity, profitable today and every
day for years to come, get the facts
promptly. For complete details with no
obligation, wire or write Department 21,
The Normis Corporation, Godchaux Bldg.,
New Orleans.

See Your
NAPA Jobber
For Prompt
Service on
Automotive
Parts!



A Nation-Wide Organization of
Independent Warehousing Distributors

NATIONAL AUTOMOTIVE PARTS ASSOCIATION
Executive Offices: 705 Fox Building, Detroit

LINCOLN LUBRICATING EQUIPMENT

plays an important part in
WAR PROGRAM

by providing fast, thorough, and economical lubri-
cation of cars, trucks, buses and other motor
vehicles so important in the transportation of war
material and men engaged in war production.
Ask your nearest jobber, or write us for details
on this equipment.

LINCOLN ENGINEERING COMPANY
General Offices, St. Louis, Mo.

A 41-13

BALDOR

**ELECTRICAL SPECIALISTS
FOR 22 YEARS**

Manufacturers of
Electric Motors
Electric Motor Grinders
Battery Chargers
Fast Battery Chargers
Battery Testers

Write for Bulletins

BALDOR ELECTRIC COMPANY
4375 Duncan Ave. ST. LOUIS, MO.



DON'T BE AN OSTRICH!

Don't give up, when cars are laid up.

Face The Facts

Repair business is slipping because cars are being stored for lack of tires.

BUT HERE'S A PROFITABLE OPPORTUNITY — BECOME

AUTO LAY-UP HEADQUARTERS

Featuring the new

PARFAX KIT & PLAN MORE THAN \$10 PROFIT—

In selling the Kit and servicing each car to be laid up, \$100, \$150, \$200 a week easily made. Write for FREE details of this new business.

PARFAX SALES

266 BRYANT ST., BUFFALO, N. Y.

For Engine Bearings
Clutch Plates & Parts
King Bolt Sets

Monmouth
is the name

Make Big Profits on Small Investment in

SHURHIT IGNITION PARTS



Ask your Shurhit jobber or write us for details on General Ignition Assortments of fast-moving parts...
Contact Points...
Condensers...
Rotors... Caps...
Coils...
Switches, etc.

SHURHIT PRODUCTS, INC.
Waukegan, Ill.

TAPERED ROLLER BEARINGS

Tyson

ROLLER BEARING CORP.
MASSILLON, OHIO

Spark Plug Service Shows Gasoline Saving

Of vital and timely interest to automotive servicemen and the public are the results of spark plug tests recently conducted by Contest Board of the American Automobile Association for The Electric Auto-Lite Co.

Eighteen cars of various ages and makes were selected at random by personnel of the Contest Board. The average age was less than two years old. First, each car was tested to determine its "as found" condition. Then, just the spark plugs were removed and compared with the Auto-Lite "Plug-Chek" Indicator and Data Book. Where the indicator showed the correct heat range was being used, the plugs were cleaned, regapped and reinstalled. Incorrect heat range plugs, and worn plugs, as indicated by "Plug-Chek," were replaced with new and correct plugs. The cars were then again subjected to a series of tests identical with the first and findings recorded and compared. Here are vital facts derived from the test results:

Twelve of the eighteen cars tested needed spark-plug attention and of these ten needed new plugs.

Use of the "Plug-Chek" Indicator and Data Book to diagnose and correct spark plug operation helped secure an average increase in economy of 6.2 per cent on the twelve cars. Fuel savings on these cars ranged from 2.2 to 12.28 per cent. This improvement in economy was not accomplished at the expense of power, but on the contrary, with an average increase of 7.35 per cent for the twelve cars.

All but three of the eighteen owners in pre-test statements reported their vehicles to be in satisfactory running condition and that no spark plug or other work was needed; proving that motorists don't realize their spark plugs are wasting gas.

Spark plug diagnosis with Auto-Lite's "Plug-Chek" uncovered other parts and service work, bringing to \$15.68 the average repairs required on each of the twelve cars needing plug correction or replacement.

Studebaker Develops Tread Measuring Gage

A new device that will enable Studebaker dealers to make an accurate estimate of the useful mileage remaining in automobile tires, and a car-owner tire budgeting plan for the conservation of this unused mileage will be released to the Studebaker organization soon, according to K. B. Elliott, Studebaker vice-president in charge of sales.

"This new device will be called the Studebaker Tredo-Gage," he said. "It provides an accurate means of measuring tread depth.



LION
is still able to deliver the GOODS!



Dependable
Quality

Now, in these stirring times, it is paying you DIVIDENDS for Lining Up With LION.

We are still supplying our old customers the bulk of their requirements!

Replacement Parts For
**FORD
CHEVROLET
PLYMOUTH**

LION AUTO PARTS & MFG. CO., INC.
1920 S. Michigan Ave., 2214-20 Main St., 1239 Osborne St.
CHICAGO DALLAS MONTREAL

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CAR REPAIRS

WE OFFER
COMMERCIAL CREDIT PLAN
ASK FOR INFORMATION

FOR BIGGER JOBS... MORE PROFIT

DISPLAY THIS *Free* SIGN

Ask Your Jobber, or Write
COMMERCIAL CREDIT CORPORATION
BALTIMORE

Where
Secure
Seals Are
Vital



VICTOR

**GASKETS, OIL SEALS
GREASE RETAINERS**

For running-in new and rebuilt engines, use auxiliary lubricants containing—

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REG. U.S. PAT. OFF.
COLLOIDAL GRAPHITE

Acheson Colloids Corporation
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PAR

AIR COMPRESSORS

(Write for Catalog "A")

LYNCH MANUFACTURING CORPORATION
Defiance, Ohio, U. S. A.
(Formerly Modern Equipment Corporation)

WHY WORRY, PARATROOPER, MY
SOUTHERN
REG. U. S. PAT. OFF.
BRAKE LINING
IS BETTER THAN ANYTHING
YOU HAVE RIGHT NOW!

CHARLOTTE SOUTHERN (WOMAN DRIVER)

SOUTHERN

FRICITION MATERIALS CO.-CHARLOTTE. N.C.

Buffalo

MUFFLERS

Stop that Noise!

BUFFALO PRESSED STEEL CO., INC., YOUNGSTOWN, OHIO

**YOUR ASSURANCE
OF CUSTOMER
SATISFACTION**

*Be Sure You
Get It . . .*

THE TIMKEN ROLLER BEARING
COMPANY, CANTON, OHIO

Wheel Balancing Data

A 17 by 22 in. wall poster with detailed data on wheel balancing has just been issued by the Harley C. Loney Co., Detroit, manufacturers of L & H Balancing Weights, and is being supplied free of charge to establishments doing wheel balancing or rendering tire service of any kind.

The terrific pounding force of an unbalanced wheel is given in pounds for every ounce the wheel is out of balance, and shows how this force increases at a rate equal to the square of the speed. For example, while a wheel that is 10 ounces out of balance causes a pounding force of only 8.6 lbs. at 20 m.p.h., this force rises to 105.30 lbs. at every revolution of the wheel when the car speed increases to 70 m.p.h., causing not only wanton waste of rubber but also serious damage to mechanical parts.

The data on the poster covers trucks as well as passenger cars.

Pendergast Heads Sales

M. H. Pendergast, general manager of the Lynch Manufacturing Corp., Defiance, Ohio, makers of PAR commercial refrigeration and air-compressor equipment, announces the appointment of W. C. White as sales manager, succeeding W. C. Allen, former vice-president and sales manager, who is retiring from the industry.

White has been associated with the company since it started business.

Allen was recently elected president of the R. E. M. A., an honor which he could not fully accept, due to his expected retirement.

Anti-Freeze Pledge

In response to the recent appeal of the OPA for economical use of anti-freeze next winter, E. Edelmann & Co., Chicago, has mailed to Price Administrator Henderson a resolution, pledging the full support of automotive jobbers in this effort. Copies of the resolution, printed in red and blue on white paper, are being distributed to jobbers with the suggestion that it be posted in a conspicuous location.

Elected by Dealers

N. J. De Sanders was recently named president of the Dallas Automotive Trades Association. He succeeds Lieut. Col. C. W. Johnson, who is with the 3d Maintenance Battalion in North Carolina. D. L. Johnson was elected first vice president. Ira McColister was named to a vacancy on board of directors.

Joins Willys

Appointment of Roger Mather, formerly of the Inland Steel Co., to the engineering staff of Willys-Overland Motors, Inc., has been announced by Delmar G. Roos, vice-president in charge of engineering.

BLUE CROWN

SPARK PLUGS

AIR COOLED

FINNED SHELL SAVES GAS

Ask your Jobber
MOTOR MASTER PRODUCTS CORPORATION
1800 Winnemac Avenue, Chicago, U. S. A.
Export Distribution
BORG-WARNER INTERNATIONAL CORP., Chicago

WORKS LIKE A Stone YET IT'S Flexible!

Flex-Stone

REG. U. S. PAT. OFF.

CONTACT POINT DRESSER

Made of hardest abrasives to smooth down hardest points. Bends, twists into tight corners, but will not break. Won't short circuit. Just try FLEXSTONE . . . you'll like it 100%!

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HULBERT CREEPER CO.
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ARO

SPEED COUPLER

Makes Each Air Hose Do Multiple Duty
FAST • DEPENDABLE

Ask Your ARO Jobber!
THE ARO EQUIPMENT CORPORATION
BRYAN, OHIO

NO. 210 SPEED COUPLER
PUSH ON
PULL OFF

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MOTOR AGE

FOR AUTOMOTIVE SERVICEMEN

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